



CHALMERS

Exploring the Challenges of Reverse Innovation

A case study of a smart plant wall

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and International Project Management Programme*

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During our work we have developed and increased our knowledge within the field of user needs and also a deeper understanding of challenges embedded in the process of frugal innovation and reverse innovation. Additionally, the work has also given us insights of the indoor climate at various job sites, and how different companies work to improve the climate.

Our hope is that our work has become useful and that our findings will be a ground for strategic decision making within Oboya Horticulture Industries AB.

We would like to address warm thanks to our supervisors, Peter Altmann, Project Assistant at Technology Management and Economics at Chalmers University of Technology and Mikael Palm Andersson, CEO at Oboya Horticulture Industries AB. With a strong commitment Peter Altmann has guided us through our work. In our process he has given us great support with important and consultative perspectives of approaches that has been valuable for us in order to produce and complete this master thesis.

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Abstract

For many years innovations have been developed by companies from Western countries, which in a great extent have implemented their innovations to emerging countries in order to catch the growth of these markets. This process is referred as frugal innovation. However, an increased activity in developing innovations has recently taking place in companies from emerging countries, which in turn seeks to transfer their products into the developed countries. This process is referred as reverse innovation. Previous literature has highlighted challenges embedded in the process of frugal innovation. However, reverse innovation is still a relatively new process and the challenges within reverse innovation are not that much investigated as the challenges in the frugal innovation process.

As the concept of reverse innovation is growing, there is of importance to investigate what challenges companies face in the reverse innovation process. Thus, the purpose of this study is to investigate and analyze what challenges are faced when transferring an innovation from an emerging country to a developed country. In order carry out this investigation, we have collaborated with Oboya Horticulture Industries, which seeks to know what kind of user needs the Swedish market have before transferring a smart plant wall from China (emerging country) to Sweden (developed country).

Action research approach has been used in this study in collaboration with Oboya. According to the collected data during the interviews, there are two main reasons why companies do not face challenges when innovations are transferred from emerging countries to developed countries (1) Business Model Strategy and (2) Similarities in Customer Needs. Our findings also show that user needs does not differ between emerging countries and developed countries in the context of the smart plant wall. Which we interpret as the user needs in emerging countries and developed countries are dynamic, and thus are in a continuously changing process. The recommendations that are made from our findings aim to show that managers who work with strategy should consider the dynamics behind the movements of user needs.

Keywords: Reverse innovation, Frugal innovation, User needs, Smart products

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1. Introduction

A growing body of literature encourages Western firms to capture growth opportunities through emerging market presence. Two key concepts in literature has focused on this opportunity: 1) frugal innovation - a process of reducing the complexity and cost of a product and its production in order to meet the needs of emerging markets (Simula et al., 2015). 2) Reverse innovation - an innovation seen or used first, in the developing world before spreading to the Western world (Immet et al., 2009).

Although these growth opportunities represent a multibillion-growth opportunity, firms routinely report to have challenges (McKinsey and Company, 2012). In the case of frugal innovation challenges reported are products poorly design for emerging economies, offerings do not fulfill target customers needs and the inability to adapt to new business models (Altmann and Engberg, 2016). Highlighted examples reported as challenges about the reverse innovation are cannibalization and culture mismatches (Corsi et al. 2014).

While the frugal innovation work takes an important first step towards understanding challenges of capture growth in emerging countries, much work remains to understand the challenges of transferring innovations from emerging countries to Western countries (reverse innovation). To explore the challenges of reverse innovation, we investigate how Oboya (western firm) within the horticulture industry are able to meet the need of potential customers for a smart plant wall (innovation developed in China) in the Swedish market (developed country).

Contrary to our expectations, we did not find the previously reported challenges of user needs, mentioned in the frugal innovation literature. Instead, this study shows that different business models and user needs contradicts challenges in the previous literature. Our findings thus suggest that Oboya overcame traditionally mentioned challenges by relying on (1) Business Model Strategy and (2) Similarities in Customer Needs.

1. 1 Background

The smart home industry has grown the last couples of years with fast developing innovations within the field of smart web and mobile technology (McKinsey and Company, 2012). In the same time more companies seeks to expand their geographical business area as more products undergoes the concept of reverse innovation. This can lead to extensive competition for western companies when the companies with origins from emerging countries enter the Western market (Govindarajan, 2012). Oboya Horticulture Industries AB is a company with origins from an emerging country that wants to capture the growth in the smart product industry.

Oboya Horticulture Industries is a global group active in the manufacture and sale of accessories in the flower industry, cultivation industry and consumer products for home and indoor cultivation. Currently, the company owns production facilities in China, Poland, Norway, Denmark, Kenya and Sweden. The Oboya group consists of fifteen companies with a total turnover of approximately 335 million SEK. During 2014 Oboya has substantially grown through organic growth but also by acquisitions of companies that bring synergy effects to the existing business. In the end of 2015 Oboya bought 50 percent of a Chinese company named ShangPa, which have developed a plant wall with smart technologies. The product is called “smart plant wall” because it consists of smart functions that for instance can measure the plant's status in order to increase its health by automatic watering and provide it with nutrition. Additionally, the smart plants wall can, along with other functions, operate as an air cleaner. Recently, Oboya have started to sell the smart plant wall in the Chinese market and seeks to sell it on the Swedish market today.

Hence, Oboya seeks to know the customer's need before launching the smart plant wall on the Swedish market. The data collected in this study will then be a ground for decision-making before entering the Swedish market. This is what this study will focus towards and is the reason for a more in depth investigation of the concepts called frugal innovation and reverse innovation will be performed.

1. 2 Purpose and Research Question

To summarize, the model 1.1 illustrates two different scenarios. First, innovations that are transferred from developed countries such as Sweden to emerging countries like China. In this transformation some scholars have presented more theoretical grounded perspective upon the challenges that can emerge when transferring innovation from developed countries to emerging countries. However, little is written about the process of transferring developed innovations and the related challenges that can occur when those are transferred from emerging countries to developed countries.

Hence, the purpose of this study is to explore what challenges that companies face when transferring an innovation from an emerging country to a developed country. This will include exploring the user needs of a smart plant wall in the Swedish market, and then together with the company collaborate and analyze the collected data from the research. The findings in the analysis can then be a ground for decision-making and to minimize the risk related of launching an innovation developed in an emerging country (China) into a developed country (Sweden). The intention with this study is to contribute to the given area of research and bring more knowledge to the topic based on a real life case. Additionally contribute with information for the company and their decision-making regarding the smart product.

The guiding research question to fulfill this purpose is following:

What challenges does a company face when transferring innovations from emerging countries to developed countries?

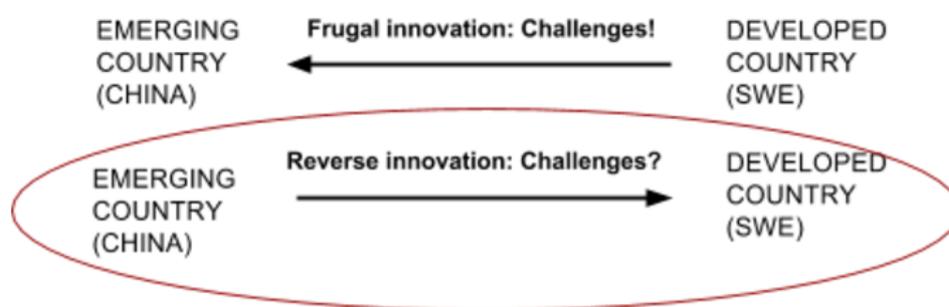


Figure 1.1 - This study aim to investigate what challenges that exist in the process of reverse innovation, highlighted in the circle.

1. 3 Delimitations

The study will be limited to the challenges regarding reverse innovation in a middle - large industrial company with the focus on the user needs of a smart product in the Swedish market. The reason behind this limitation is based on the theoretical gap identified in the literature, but also to explore the user needs of a product developed in an emerging country. The investigation will focus on 25 companies within a geographical area of 100 kilometer with Gothenburg as center point. These 25 companies have been selected through a developed screening process (see chapter 3, page 20) and the chosen area has been chosen in order to make the collection of data more possible for the limitation of time of the thesis.

1. 4 Outline

This thesis is divided into five chapters, which aims to provide the reader with an overview of the report to better understand and easier get the whole picture of this study. In addition, there is an appendix and reference list in the back of the report.

2. Theoretical framework

Chapter two contains examples of the theoretical framework that highlights challenges within frugal innovation and reverse innovation in the context of user needs.

3. Method

The method used for this paper is described and motivated, which then is followed by a presentation of the chosen research approach. After the research approach a description of how the study is conducted. The final part of this chapter consists of a discussion and a compilation about the study approach.

4. Empirical data

Chapter four outlines the empirical data that includes 25 interviews with answers to 40 questions, along with graphs that visualize highlighted questions and statements from the CEO of the company.

5. Discussion

Chapter five highlights our findings together with explanation of the findings, this is followed by recommendations to managers who work with strategy regarding to user needs. The chapter also presents further research questions.

1. 5 Definitions

Words that are essential for the understanding of this thesis are defined below.

Frugal innovation - Frugal innovation are innovations that are developed with emerging markets in mind (Simula et al., 2015). Frugal innovation is the process of reducing the complexity and cost of a product and its production. Normally, frugal innovation refers to removing non-important features from a product in order to sell it in developing countries.

Reverse innovation - Reverse innovation is referred as an innovation seen or used first in the developing world, before spreading to the Western world. It also refers to a process whereby products are developed as inexpensive models to meet the needs of developing countries, which later are repacked as low-cost innovative products for the developed countries (Immet et al., 2009).

Emerging country - An emerging market is a country that has some characteristics of a developed market, but does not meet standards to be a developed market. An example of an emerging country is China and India (O'Sullivan et al., 2003).

Developed country - A developed country is characterized by having an economy that is high developed and an advanced technological infrastructure in comparison to countries that are less industrialized. Examples of developed countries are Sweden, England and USA (O'Sullivan et al., 2003).

Cannibalization - Heskett (1976) define cannibalization as “the process by which a new product gains sales by diverting them from an existing product”. Another scholar named Copulsky (1976) define cannibalization as “the extent to which one product’s customers are at the expense of other products offered by the same firm”.

Smart product - Smart (connected) products are products embedded with sensors, processors, software and connectivity, that allow data to be exchanged between the product and its environment and other products and systems (Mühlhäuser, 2008).

2. Theoretical Framework

The chapter will initially cover those concepts and theories that are considered important to understand in order to carry out this research. It introduces the reader to the concept of frugal innovation and reverse innovation with examples that highlight the challenges within the literatures.

2. 1 Frugal Innovation

Frugal innovation is innovations that are developed with emerging markets in mind (Simula et al., 2015). One example of frugal innovation is the case of Foldscope, which were developed through the need of diagnose sick people rapidly in emerging countries. The case of Foldscope was developed by replicating a microscope. The existing microscope were bulky, hard to maintain and expensive to purchase. Additionally it required electricity, which could be a resource that does not exist in some rural areas of emerging countries. In order to use a microscope and to diagnose, knowledge was also a crucial factor (Cybulski et al., 2014).

The idea of Foldscope came to reality through Manu Parkash and his team, which during travels in poor countries saw that microscope equipment that was donated were not used in the right way. In order to make an affordable microscope that were easy to use and maintain, Manu Parkash created a microscope out of paper, which turn out to be a success in order to make diagnoses (Cybulski et al., 2014). The Foldscope example illustrates several key characteristics of frugal innovation, for instance that products are made by less resources (made out of paper), feature reduced (less advanced but still have the core features of a microscope) and developed in order to carry out customers' needs (rapid diagnose sick people).

Although the example of Foldscope shows a successful solution of a problem, there are challenges embedded in the process of frugal innovation. The Foldscope example illustrates the importance of knowing the local environment in order to meet the user needs, which is one challenge for western firms when developing innovations for emerging countries (Carlson and Wilmot, 2006; Winter and Govindarajan, 2015). In order to innovate a successful product there is of importance to detect the user needs in the specific setting, otherwise the product loses the end user and the product turns out to be unused (Von Hippel, 2005; Lettl, 2007). In the example of Foldscope, the microscope that was used before the Foldscope where innovated, was not suitable in the setting where it should be used which became a problem for the users in the emerging country. The product thus became unused due to poor conditions and the limited knowledge of how to use the microscope.

The example also highlights that the microscope that was used before Foldscope was developed, was poorly designed for emerging markets which Anderson and Markides (2007) and Zeschky et al. (2011) highlights as a challenge within frugal innovation. The microscope had too much features in relation to what the user in the poor countries were in need of, which resulted in a hindrance for the users. What was clear for developers in the western world regarding electricity and the knowledge of how to use the product became a hindrance for the users. This highlight that western companies had a lack of knowledge of the user needs and the local settings of the environment. The product that was offered before the innovation of the Foldscope had not going through research of what the customers in the developed country were in need of, which resulted in that the offerings did not fulfill the target of customers needs, this is also highlighted as a challenge within frugal innovation by Zeschky et al. (2014). The challenges found in the frugal innovation literature are presented in table 2.1.

Table 2.1 shows challenges found in the frugal innovation literature.

Challenges with frugal innovation	Source
Products poorly designed for emerging economies.	Anderson and Markides (2007), Zeschky et al. (2011)
Offerings do not fulfill target customers needs.	Zeschky et al. (2014)

2. 2 Reverse Innovation

Reverse innovation is referred as an innovation seen or used first in the developing world, before spreading to the Western world. It also refers to a process whereby products are developed as inexpensive models to meet the needs of developing countries, which later are repacked as low-cost innovative products for the developed countries (Immet et al., 2009). Corsi et al. (2014) highlights challenges in one example of reverse innovation. The example regards to an air- conditioning system in an Italian company named Speres. Speres wanted to transfer one of their products that were originally designed to meet the user needs in China (emerging country), to developed countries. During the process of transferring the product, two challenges were highlighted in the literature, (1) Cannibalization and (2) Cultural mismatches (Corsi et al., 2014).

The challenge of cannibalization regards to when products have the potential to compete other products out from a specific market (Corsi et al., 2014). What happened was that Speres product from China, with its innovative features were viewed as a big competitor to other products that Speres had within their range of products. Thus, Speres decided to launch a remodeled product in the developed countries, which was less competitive with reduced features in order to not compete with their existing collection of products. Another challenge in the case of Speres was “culture mismatches”, which is highlighted in the example as miss trust between employees from different cultures and countries. Speres faced the challenge of culture mismatching in the information flow between the Italian and Chinese regarding the design and innovative solutions of the product (Corsi et al., 2014).

Altogether, the available evidence from the case of Speres, seems to suggest that challenges such as cannibalization and culture mismatches can be avoid. The risk of cannibalization was avoided from Speres business strategy, which highlights the importance of changing the product for the developed countries (Corsi et al., 2014).

Finally, the challenges found in the frugal innovation literature is not the same as the challenges found for reverse innovation, which is shown in table 2.2. The question is if these are the only challenges that exist in reverse innovation, or what else challenges are there? Table 2.2 demonstrates challenges found within literature of frugal and reverse innovation.

Table 2.2 presents challenges within the revers innovation.

Challenges with reverse innovation	Source
Cannibalization of products within the same market.	Corsi et al., 2014
Mismatches in cultural settings regarding miss trust.	Corsi et al., 2014 and Govindarajan, 2012

3. Method

The method used for this paper is described and motivated, which then is followed by a presentation of the chosen research approach. After the research approach a description of how the study is provided. The final part of this chapter consists of an analysis and a compilation about the study approach. The mission was to identify challenges of revers innovation; this was made by an investigation in user needs of potential customers regarding Oboya's smart plant wall in Sweden. The gathered information from the investigation was then the basis for determining and discussion about how the products would be designed and launched in the Swedish market.

3. 1 Research Design

The research design of this method is of action research. Its fundamental is that the researcher takes an active role and become a part of the change process within the area that are investigated. The action research allows for a role as the “insider” in the company in order to create a better understanding of the business (Kaplan, 1993). The study is implemented in phases where the researcher goes from being active in the study to take a step aside to reflect upon it (Johnson, 1992). In this process it is of importance to have some type of documentation process to use, diary writing is one such a process (Avison et al., 1999). This study was designed with these principles in mind, and next we present how these principles were carried out in practice.

In section 3.2 (literature studies) we describe how we acquired the field knowledge, in section 3.3 (brainstorming customers) we describe how the customers were identified through a brainstorming session, in section 3.4 (model development) we explain the developed and used model of choosing participants to interview. In section 3.5 (finding potential customers) we describe how we searched for potential customers, and in section 3.6 (development of questionnaire) we describe how the questionnaire was developed. In section 3.7 (data analysis) we describe the analyzing process of the gathered data from the interviews, and in the section 3.8 (collaboration with Oboya) we describe our meetings with Oboya. In the final section 3.9 (method analysis) we analysis the used method for this study.

3. 2 Literature studies

First step we took was to get a deeper understanding of the (1) importance of plants for the indoor environment, (2) the air quality in the Swedish offices and homes, as well as the understanding of how the (3) development of the 'Internet of things' proceeds, more specifically for the smart technology within the plant industry. The reasons behind studying these topics were to get a wider knowledge base for the creation of the questionnaire, and also to discuss and answer potential questions from the participants and Oboya. For instance, questions such as the air quality and characteristics of plants. The acquired knowledge was found from Google search.

3. 3 Brainstorming

When we had achieved a deeper understanding of the research subject, a brainstorming session began with the main subject of "who is the customer?". After the brainstorming session we identified 22 different industries. The result after this brainstorming session was that the industries had been divided into two different groups, (1) private companies and (2) public companies. The reason behind this separation was grounded on the fact of the law of the Public Procurement Act, which the public sector bases their procurements on (Swedish Competition Authority (2011)). The potential customer segments are listed in table 3.

Table 3 presents two separated groups, private companies and public organizations.

Quantity	Private companies	Public organizations/companies
1	Wellness/Spa	University / High school / other programs
2	Companies with offices	Kindergartens
3	Restaurant chains	Municipal and their buildings
4	Leasing-companies	Hospitals
5	Housing associations	Associations (Sports, etc.)
6	Hotel	Fairs and event company
7	Shopping malls	Airports
8	Retail chains	
9	Banks	
10	Lawyer companies	
11	Construction companies	
12	Architects	
13	Auto repair shop	
14	Veterinarians	
15	Machine shops/Factories	

3. 4 Description of the Selection Model

After the brainstorming session we developed a model, which was used to map what companies to contact. The purpose of the model was to find and choose the companies that have a higher probability of buying a smart plant wall. This model was also developed in order to decrease our own impact on the results, in this case such as personal guesses and thoughts that we could be affected from companies and their values and brand, and therefore favor them in the admission process. Hence, the developed model increases the reliability and the validity of the study. Additionally, this model saved time for us when searching for what companies to contact, but it also gave us a clear systematic working process, for instance whom to contact first. According to Aczel and Sounderpandian (2009) clusters are beneficial to use when individuals are naturally grouped, thus we have chosen to use cluster samples in our study. Our method consists of six categorized clusters. The reason behind these six clusters was because we could not think of more other relevant clusters that could be suitable for this model. However, within each cluster was a community of potential customers. The more clusters a potential customer appeared in, the higher points the potential customer received. The potential customers with the highest points, and thus most clusters, had then a higher significance to get interviewed by us. The clusters are listed in table 4.

Table 4 presents six different clusters.

Quantity	Clusters
1	Large volume
2	Exposure
3	Focus on environmental thinking
4	Size of business
5	Creative professional
6	Diffusion effect

The first cluster was named “Large volume” and it consist of the companies that have potential to buy the plant walls in a large volume, it could for instance be companies with many offices where the smart plant wall would fit in. The second cluster “exposure” regards to companies with a high visual exposure to people. It can be explained by where many people can see the smart plant walls, which its purpose is to promote the product. The third cluster is named “focus on environmental thinking” and can be explained by those companies who clearly communicate that they are working with environmental improvements. The fourth cluster

named “size of business” regards to how large the business is consider their economy and their likelihood of invest in the offices/buildings/indoor environmental. The fifth cluster “creative professional” regards to companies who works either with research, creativity and innovative tasks. This cluster was developed because of the fact that good inventory for employee’s increases their health and creativity (Oldham et al. 1996). The final cluster was named “diffusion effect”, which consists of companies who could implement or sell the smart plant walls to their own customers. We categorized the companies to the clusters, which they belonged to (see table 5).

Table 5 presents six clusters and how different companies were grouped within each cluster.

Quantity	Large volume	Exposure	Focus on environmental thinking	Size of business	Creative professional	Diffusion effect
1	Companies with offices	Airports	Companies with offices	Companies with offices	Companies with offices	Architects
2	Hotels	Restaurant chains	Hotels	Restaurant chains	Banks	Leasing-companies
3	Universities etc.	Shopping malls	Shopping malls	Leasing-companies	Lawyer companies	Restaurant chains
4	Restaurant chains	Hotels	Leasing-companies	Housing associations	Universities etc.	Hotels
5	Shopping malls	Wellness/Spa	Universities etc.	Hotels	Architects	Shopping malls
6	Retail chains	Leasing-companies	Restaurant chains	Shopping malls		Construction companies
7	Municipal buildings	Retail chains	Kindergartens	Retail chains		
8	Leasing-companies		Municipal buildings	Banks		
9	Fairs / event companies		Airports	Lawyer companies		
10	Hospitals		Hospitals	Construction companies		
11			Architects	Architects		
12				Auto repair shop		
13				Municipal buildings		
14				Factories		
15				Fairs / event company		
16				Associations		
17				Airports		

When all the data was inserted we divided the companies by the number of clusters they appeared in. The companies that were in five, four and three clusters were prioritized to contact first. The companies that appeared in these clusters are presented in table 6.

Table 6 presents the companies that were grouped in 5, 4 and 3 clusters.

5 clusters	4 clusters	3 clusters
Restaurant chains	Companies with offices	Retail chains
Shopping malls	Leasing-companies	Fairs /event companies
Hotels	Universities etc.	Airports
	Architects	Municipal buildings

Beside this model there was another method developed to gain better understanding of how to design and develop the smart plant wall. This model was named the competitor model, which was about to interview the competitor’s customers regarding their smart plant wall. The competitor’s customers were found from the competitor’s websites and were listed in the customer contact list. The fundamental of this method was to get insights of what could have been improved regarding the smart plant wall. However, the competitor’s customers were few and since they were not located in a geographical area close to the researchers base, this method become unfortunately not useful in this study. We presented both methods for Oboya and the supervisor and both of them were approved.

3. 5 Finding Potential Customers

We used Google search to find and collect data of all the companies within the clusters. Every suitable company was listed in a contact form. Information such as emails and phone numbers were listed together with what kind of position the employee had in the company. When the list was full with potential customers, we developed an email template. This was followed by a process of sending emails to potential customers. Unfortunately, the response rate was low, which then was followed by phone calls to the companies. The phone calls was a better strategy to book meetings, but it was still not effective, consequently the response rate was still very low. However, this was followed by a strategy of direct meeting, which means that we went out of the building and visited the companies without a warning. Since it was very difficult to get meetings with companies that had been stated in the contact list, we came up with a new strategy, which was to get meetings with as many companies as possible without considering the method that was earlier developed. Consequently, despite many attempts we did not

manage to interview the companies within five clusters. However, the companies within the four clusters were all interviewed. Altogether we managed to get 25 meetings.

3. 6 Development of Questionnaire

Next we developed a questionnaire. When all the questions were developed in the questionnaire we divided the questions into eight sections. The sections were environmental impact, existing service, air, design, smart functions, price class, needs assessment, and suggestions (See chapter 4, page 29). This division was useful due to the postpone analyzing process, but also to get a better structure in the process of interviewing. The questions focus on essential topics that need to be answered in order to get an overview of the user need regarding the smart plant wall. If it proves to be a need it was essential to know what kind of need it was in order to develop the smart plant walls in the right way. Essential questions could be those questions that resulted in data that could be of higher interest for Oboya to get in order to make decisions about the product development. Such questions could for instance be about the sizes, smart functionalities, and the price class of the smart plant wall. The essential questions and answers are highlighted with bold boxes in the empirical chapter.

After we had developed the questionnaire we had a meeting with Oboya. In this meeting we presented the questionnaire for Oboya, and they approved it. The same questionnaire was later presented to the supervisor to see if there were any objections or changes that needed to be implemented. There were some minor changes made before the first meeting, such as adding questions that highlight if the participants would like to buy a smart plant wall for their home. All the questions together with the answers are presented in the empirical chapter (see chapter 4, page 20).

3. 7 Interview Resources

To be able to show the smart plant wall for the participants during our interviews we got flyers from Oboya, which is shown in figure 3.7 and figure 3.8. These flyers have been shown to the participants in order to clearly explain the smart plant wall and to secure that all the participants get the same picture of the product before answering our question about the smart plant wall.



Figure 3.7 shows the smart plant wall with different examples of plants.



Figure 3.8 shows the cleaning system to the left and the particles that the smart plant wall is reducing. To the right the figure visualizes three different sizes of the current smart plant wall.

3. 8 Data Analysis; Identify Challenges

We developed a systematic analysis data model (see figure 3.8) in order to easier measure and compile the data. There were two reasons behind this. First, the gathered data consist of 40 answers from 25 participants, which were approximately 1000 answers of data that needed to be evaluated. Second, we interpreted the data in two different ways. Therefore it was of important to do a systematic analysis process. One example of different interpretation between us (the researcher for this study) was the need of the air cleaner in the Swedish market, which was believed by one to be necessary, but by another un-necessary. A potential reason behind this can be that we held different interviews, and that we interpreters data in different ways due to our personal backgrounds. Furthermore, all the collected data were translated from Swedish to English when they were implemented into the model.

The model consists of a table with the questions on the top and the participants on the left, this resulted in a middle box where all the answers could be filled. Hence, the data could easier be summarized, see figure 3.8 for an example. We have gathered the data in tables because we wanted high transparency of our empirical data. To have transparency permits others to use the work and to make own conclusions. It enables also that scholars can understand others works and make it visible for public examination (American Educational Research Association, 2006). Consequently, all of the 40 questions were not used to make illustrations of, since some of the questions were too similar to each other. We used similar questions in order to ensure that the correct answer was given from the participants. Hence, there was no reason to present every single question for Oboya. Totally 22 questions were summarized and illustrated with graphs and tables. The reason of more appealing and understandable data was to easier and faster visualize the data during the meetings with Oboya. The summarized tables and graphs can be seen in the empirical chapter (page 30).

Category	Companies	Question 1. Do you have plants indoor?	Question 7. What in your working environment does affect you?	Question 8. How are you affected in the current situation by the plants in your indoor environment?	Question 9. How do you perceive the indoor environment?	Question 10. What kind of problems do you think you have in your indoor environment?	Question 11. Is there something that you wish would be in your indoor environment today that does not exist today?
Architect office	Liljewall	No, but we have got some few in presents. We have too few plants. Many employees ask for the flowers. We don't like the design of the plant pots.	- Acoustics is very important. (Here helps the plants too.) - Good also to see plants.	Air quality: Want to have measurement (numbers, etc.) if the plants will make better air.	Too many people in the office now days. We have grown out of it. Sometimes we have bad air. It is important it is silent environment, also that the office rooms are looking good, since more people will feel better.	Our own: Acoustics - No silent room. We miss the possibility to move around in the office.	- No data
Car mechanical store	Mekonomen	Some few, customers have given us. But no plants in the shop. Why? - It has just been so.	- Some problem with noise. - Sometimes in the shop it becomes very cold in the winter, but we will have a new system for that. - No problem with the air. - We have ISO certification.	Plants are nice to have. It might give some calmness feeling in the room.	- Sometimes it is a little bit stuffy in the summer, due to the ventilation. - When we build this shop we customize it, just as we wanted. - Coldness and noise - we are happy we don't have that today.	- See question 7 and 8.	- Nothing that we really are in need of, what I know right now.
Property Management specialist to school facilities	Chalmersfastigheter	Yes, for two reasons, first, it is beautiful, second, it provide us with humid air during winter when the air normally is dry.	Impact - looks nice with green plants. They give a calming and harmonious effect. The climate become better - temperature, and more oxygen in the facility.	See question 1.	Air quality is good. 80 percent of the people can be satisfied with the conditions. Some noise issues, but we have installed noise absorbents at the ceilings, for instance in Lindholmen.	- Noise problem. - Bad air quality.	- No data

Figure 3.8 presents an example of the tables used to analyze answers from 25 participants.

3. 9 Collaboration with Oboya

We had interviews and discussions with Oboya continuously during the project, both at Chalmers and at Oboya's head office in Stenkullen. In one meeting at Chalmers the supervisor joining us and together we discuss about the ongoing process of our work. Moreover, a survey was made and used to test Oboya's thoughts and ideas before and after the research. This means that Oboya got the same survey with the same questions before the research was made and after the research and all the data gathering had been made. The reason behind this survey was to get data of how much of impact our research had made for Oboya's thoughts and ideas regarding the product development and the launching strategy of the smart plant wall in the Swedish market.

The survey was designed with 14 scale questions, where every question had a scale between 0 - 10. 0 stands for "not important" and 10 stands for "very important" The scale questions was used to make numerical data, and thus the process of measure the data was easier and more comparable. An example of a question can be seen at figure 3.8. After the surveys was filed with data they both was compared to each other.

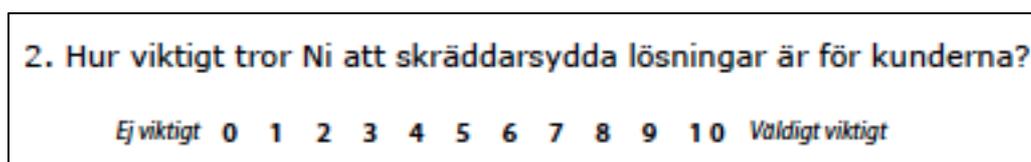


Figure 3.9 presents one example of a question (in Swedish) with a scale between 0-10.

When the illustrative graphs from the research was presented, and when Oboya had filled the surveys, a discussion about the data from the investigation were held. The topics were about how the smart plans walls would be designed, what functions to integrated and what price classes the smart plant walls could have and so forth on (see synthesis in chapter 4, page 84). This meeting was then followed up by a meeting with the supervisor where a discussion where held about the final result and how the report should be designed.

3. 10 Analysis of the Method

An analysis of the used method in this study will be presented in this section (section 3.9). First, a discussion about our collaboration with Oboya is presented, which then is followed by differences in interpretation and obtaining the right information. The final part discusses the importance of involving the right potential customers.

3. 10. 1 Collaboration

When concretize the used method for this research, there are several factors that we want to highlight and discuss. First, when we had the final meeting with Oboya we presented all the data that had been gathered during the study. Since it was quite lot of data to present, we decide to present data that we believed were of more importance for Oboya to take part of. Hence, 40 percent of the data were not presented to Oboya, but if they were, maybe the entire discussion about the product would be different. However, the reason for not presenting all the data was due to the long time it would take to present all the 40 questions. Furthermore, since the presentation and the following discussion was time consuming at the final meeting, we felt during the entire collaboration process that it was a little problematic to get meetings with Oboya. But there is a natural reason behind this, since the supervisors we had at Oboya was the founder and the CEO of the Oboya group, their time was valuable. This means that their schedule was very booked and thus we never reached a very tight collaboration. Another problematic thing was that we didn't actually see the smart plant wall before the final meeting, and when we saw it the first time we actually got surprised. The product looked better and more interesting than we had seen on the flyers that were given.

3. 10. 2 Differences in Interpretations

During the study we got two different inner feelings consider the user need of the smart plant wall, one positive and one negative. After conducting the data it was clear that the predominant of the participants answers had a need of the product. This variance in interpretation could have different explanations. As highlighted by Carlson and Wilmot (2006), there is often hard for companies to understand the user needs and catch opportunities for further development of innovations.

Despite our focus during the interviews and our belief that we could interpret what the potential customers said, this study is another proof of how incredibly complex and subjective it is to understand other people's desires, needs and requirements. Although the interview participants responded verbally to the questions, they could mean something different in the way they express themselves. It is difficult to interpret a combination of all the provided signals given from potential customers, and thus it is important during the development of innovations to have a close and continuous collaboration between companies and potential customers (Von Hippel, 2005). Winter and Govindarajan (2015) and Von Hippel (2005) highlights that companies common make incorrect interpretations of customer needs, which can result in loss of customers and that the product do not find the way to the market.

3. 10. 3 Obtain the Right Information

Through our work and the insights that we got from our participants we have increased our knowledge around the product from a specific point of view. Our competence is something that we added to the company, which they also were seeking for. As students we have had the possibility to collected information that otherwise were not possible gather. Some of the participants that were interviewed mentioned that they would not like to be interviewed regarding our subject, if we were not students. Weiss (2008) stresses the information collected during the interviews are something that forms one piece of the important solid ground. The difficulty to obtain information is something that hindrance the process of developing innovations successfully. In order to gain information from potential customers it is of importance to use an appropriate method (Lettl, 2007). The way that we were interacting with the potential customers (interviewing) may have been disadvantageous, since it might affect the outcome of the answers due to our presence.

3. 10. 4 Involving the Right Potential Customers

The highlighted importance that Carlson and Wilmot (2006) expresses of integrating the right potential customers in the developing - and innovating process are something that we have created us a view of. For instance, some of our participants were more dedicated to collaborate and also in a greater sense willing to share their thoughts, ideas, values with us compared to some of the other participants. It was easier to interact with people who wanted to collaborate and see new solutions. Thoughts and ideas of further innovation came naturally from these persons. People which was perceived as passive and enclosed during the interview situation was difficult to interact with, which supports Von Hippels (2005) argument that it is very important to carefully choose the customers which should be participating in the innovation process in order to have successful outcomes. Although, there were some passive participants who were harder to interact with, we still felt that we could get useful information from them.

In order to integrate the right potential customers in the innovating processes it is important to listen to those who in the initial stage are not so active participants. Those persons who are not open-minded with their thoughts and ideas, may be unwilling to say things of different reasons, for example because of some kind of fear or that they do not believe in the product. It is valuable to find a collaboration form that enables these people to open up and convey their thoughts in order to detect relevant information for development and innovation. Our study has shown that some of these participants saw the product from another perspective, which gave us valuable information in the development process of the smart plant wall. In an initial stage when the primary cluster still is visionary there could be an advantage to be broad in the range of different potential clusters, companies and the choice of participants. Thoughts and ideas that Von Hippel (2005) mediate, is to pay attention to whom the collaborative ones are, since this could be beneficial later on in the innovation process, and not in the stage to find the segments and market. Thus, we interviewed companies from different industries in order to get information from different perspectives, see table 5 (page 21).

4. Empirical data

In order to find if the challenges of frugal innovation (products poorly designed from emerging economies and offerings do not fulfill customers needs) and the challenges highlighted in the reverse innovation literature (cannibalization) in the transferring process of Oboya's smart plant wall, we interviewed potential customers about their user needs regarding the smart plant wall.

The empirical data chapter consists of eight clusters with questions and its respective answer from 25 participants, with the aim of describing and illustrating the empirical findings. First, we present the collected data from each cluster. The highlighted boxes present the most striking result, which were the basis to our findings. These findings are then summarized in a table, which then is presented in a figure in order to easier visualize the main findings. The tables and the figures are then discussed with Oboya and their thoughts of the collected data are highlighted below each table. The final part of this chapter is a synthesis, where the main findings are presented and described.

The eight clusters are following:

1	Environmental impact
2	Existing service
3	Air
4	Design
5	Smart functions
6	Price class
7	The need
8	Synthesis – The main findings from our research

We next present the empirical data that has been studied and collected during the interviews.

4. 1 Environmental impact

The environment impact is crucial to highlight in order to get a better understanding of the customers need, but also to find what kind of problems the customers have regarding the environment. As follows from the table shown below there are six questions dealing with the indoor environmental impact among 25 companies. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the marked boxes are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 1. Do you have plants indoor?	Question 7. What in your working environment does affect you?	Question 8. How are you affected in the current situation by the plants in your indoor environment?	Question 9. How do you perceive the indoor environment?	Question 10. What kind of problems do you think you have in your indoor environment?	Question 11. Is there something that you wish would be in your indoor environment today that does not exist today?
Architect office	Liljewall	No, but we have got some few in presents. We have too few plants. Many employees ask for the flowers. We don't like the design of the plant pots.	- Acoustics is very important. (Here helps the plants too.) - Good also to see plants.	Air quality: Want to have measurement (numbers, etc.) if the plants will make better air.	Too many people in the office now days. We have grown out of it. Sometimes we have bad air. It is important it is silent environment, also that the office rooms are looking good, since more people will feel better.	Our own: Acoustics - No silent room. We miss the possibility to move around in the office.	- No data
Car mechanical store	Mekonomen	Some few, customers have given us. But no plants in the shop. Why? - It has just been so.	- Some problem with noise. - Sometimes in the shop it becomes very cold in the winter, but we will have a new system for that. - No problem with the air. - We have ISO certification.	Plants are nice to have. It might give some calmness feeling in the room.	- Sometimes it is a little bit stuffy in the summer, due to the ventilation. - When we build this shop we customize it, just as we wanted. - Coldness and noise - we are happy we don't have that today.	- See question 7 and 8.	- Nothing that we really are in need of, what I know right now.
Property Management specialist to school facilities	Chalmersfastigheter	Yes, for two reasons, first, it is beautiful, second, it provide us with humid air during winter when the air normally is dry.	Impact - looks nice with green plants. They give a calming and harmonious effect. The climate become better - temperature, and more oxygen in the facility.	See question 1.	Air quality is good. 80 percent of the people can be satisfied with the conditions. Some noise issues, but we have installed noise absorbents at the ceilings, for instance in Lindholmen.	- Noise problem. - Bad air quality.	- No data

Property Management specialist to school facilities	Chalmersfastigheter	Yes we have. Because to get a good experience of the environment, also it is good for the air quality. Some problem could be to take care of them.	Air, noise, and light. We have had problem with the light. The indoor environment is always important.	It is nice with plants. They look good and nice to have them around.	Air quality: Our own office - is good. Our houses - pretty good. But some are not that good. Some houses have been change lately in order to make a better environment. Noise: Good - some places could be better. (Big areas with many windows). Design of the room, we have some rules to follow (it is regulated).	- No data	- No data
University	Högskolan Borås	Yes, in order to get a bit better environment. It becomes a softer place. It also gives a good feeling in the room. Don't see any problems with plants. We also have some plastic plants.	The ergonomic is important. Design - that things look nice, the color palette indoor. 10 years of amortization as a public sector.	- See question 1.	- We think the air quality is good. We measure also the air. - No noise problem. - Students sit everywhere; good it is a movable area, working for active areas. - We like our group rooms (designed)	In the new textile house the floor is too hard, so we have bought soft carpets.	The design and environment of the dining room.
Municipality	Härryda kommun	Yes, we have plants. For schools and kindergartens. At the municipal buildings are plants. Retirement homes have a little more plants. Why? - Nice impression.	Light, noise, temperature, comfort, and the design of the room. Eco noise, etc. The air is bad - but usually it is due to the "wrong" temperature.	It is good since it makes the air humid indoors.	We have some offices that are empty, where everyone can be. Otherwise, we have a lot of one-man-office here.	Some customers say that the air is bad. Too dry air, etc. But then we have told them to get some plants. There can also be too humid. Where legionella might grow and spread.	- No data
Municipality	Stenungsunds kommun	Yes, 7 plants on the "floor" and 12 plants at the windows.	The air! We have bad air inside here. 70 percent of the air is bad here. The ventilation system doesn't work.	Good, they are nice and they give a better air inside the house.	Bad air, and we don't have good inventory.	Problems. 1. Air quality 2. Temperature 3. Noise 4. Light 5. Smell (From restaurants)	

Offices and manufacturing	SKF	Yes. We have it. The employees buy their own plants. But in "public" places we rent the service.	Noise Colors If it is fresh environment.	- No data	It shifts depends on what offices we talk about. We have old and new offices. There have been very warm during the summer, but now we have installed sun "screens". The noise also depends on. Not a problem with the noise in the warehouse. We like the new areas/buildings.	The old rooms are not so good. Then we also have too many people in the offices. Bad air in those rooms.	Not really. Get some new furniture, but it hard to decide with many managers.
Offices and manufacturing	Volvo cars	Yes, it makes the working place good.	We are positive affected by the plants where we have them. But it is important that they are of good quality, otherwise they can become an irritation.	See question 7.	Good air quality. But at some offices/conference rooms it is very bad air after a while, especially when we are many in the same room. Our ventilation system can't provide us the capacity we need today. The restaurant environment is not good, but the offices are good. We have problem with the heat.	Restaurant space, and some offices where we have meetings.	Something that make this working place a very successful place. Maybe an air control system in the meeting rooms, which can be regulated for each room.
Logistic offices and storages	DB Schenker	Yes, around 30 plants. Problem: The service and the costs. It is nice to have flowers.	Temperature, noise. In the warehouse the temperature need to be more stable. Dust and temperature is important in the warehouse. Also noise.	- No data	Air is good. Sometimes the client requires that there should not be dust. We have air cleaner in on the ceiling. Noise is not a problem. The offices are designed, but we go after the restrictions. We like that our offices are calm, fresh and stimulus.	Might be a problem with the big widows at the office that let in heat from the sunshine, it becomes very hot. But we have fixed that now.	- No data
Logistik, offices and storage	TNT	Yes, because we want a nice environment for employees. No problem with plants as long as someone takes care of them.	The psychological effect between employees.	It is good since it makes humidity indoor.	We have good air here. But we have had problem. The noise is a bit problem, but we bought carpet to decrease the noise. I like the rest room, which is good for us to chill out and get some rest from the work.	A little air, a little noise. But it depends on the money.	- No data

Sheet metal worker	Godhems plåt	Yes, but very little. Only houseplants. For decoration. The problem is that someone needs to water it.	Problem with noise and light. Bad light luminance - We become tired after few hours. The noise bounces off the walls.	We become happy from plants. We become inspired with flowers, also funny to take care of them.	Good air. They have separated office and workshop. The flowers are at the office; we are also satisfied with the staff room.	- See question 7.	I coffee machine. It would increase the comfort factor.
Small offices	GU Ventures AB	No, we have no plants in our office, but each employee is responsible for their own environment. This means that you have to buy your own plant. But we have otherwise no public decoration of plants in our office, unfortunately.	Light, air, ergonomics and colleagues. Over time we are affected by the noise of current renovations, primarily when drilling in concrete. We have even had to cancel appointments because of that.	- No data	I have been thinking about the air quality quite a lot. It has to do with the ventilation. The ceiling in our office is pretty low and it becomes quickly quite bad air in terms of that it becomes muggy, hot and it feels that there is no oxygen. The sound environment is good. I appreciate that the windows are easy to open in order to get oxygen/new air. I often have the windows open.	The noise of drilling in concrete. That the indoor temperature becomes hot and feels that there is no oxygen left.	Green plants! I have actually been thinking about that we should have a plant wall many times. We would absolutely like to have one here in the office.
Spa/wellness	Hagabadet	Yes, in order to get a nice environment. No problem with it, consider to watering them.	It might be the noise; We play music, which some people call it for noise. We have both humid and dry environment here. We have very nice facility, which affects us positively. We like the noise; we put in music in places where we can have it. In some places where we want to decrease the noise we are not allowed to do that.	Positive effect.	Air quality: Good, depends on where in the facility. We have an old house and sometimes we need to open the windows to get more clean air. The design of the working space: There are no plans for the inventory. I haven't thought so much of this.	We don't have a facility that fits perfectly to our business. But we think it is ok.	I would like to have more plants, curtains and carpets. We have hard to have more plants but it might be hard since we don't have so much light here.
Spa/wellness	Stenungsbaden Yacht Club	Yes we have, because it looks good to have them. I don't see any problem with them, besides that someone need to take care of them.	The temperature. To warm during summer, and too cold during winter.	I become happy and I get energy from them, and opposite if they look bad.	Not to big problems with the air. Usually the temperature is the problem. No problem with any noise. I like the plants and the design indoor.	Hard to say, nothing really for the environment.	No data
Large office	Cowi	Yes, the idea behind it is the aesthetically reason and that it should feel enjoyable and pleasant to see the plants.	Green plants are important. I become negatively affected regarding sound. In general our employee	See question 7.	See question 7.	Noise problem.	Nice looking meeting rooms, ours are at present very boring. I would like furniture and plants that support creativity.

Large office	Sweco	<p>Yes. Good for the indoor environment. Very nice to have them. We don't allow employees to have their own plants to the office. We have them because of the visual effects, and that they clean the air.</p>	<p>complains much about the sound environment. But the climate, existing ventilation and the effect of heat are also problems that are highlighted. We are working in an open office environment without silent places.</p> <p>Of course the environment make difference. We have a new building with new inventory. Sometimes the noise, temperature and the function of the house can make an impact on us.</p>		<p>The air quality varies on different rooms. (But it depends on the installation of it.) The noise could be an issue at some places.</p>	<p>Some problem with noise in big spaces.</p>	<p>I would like to have activity-based environment.</p>
Tech company	Got Design	<p>Yes we have, It looks nice and it also gives a calmer environment. Not any problem as far as we have "Britt" since she watering them. It is important someone do that.</p>	<p>Of course the air, also the noise. The AC- system doesn't work so well. It becomes too warm sometimes. The spaces: the tables are important, not too much things around.</p>	<p>See question 1.</p>	<p>We think it is good, we have some good stuff for our employees since they sit a lot in the office when they make sketches, etc.</p>	<p>The warm air. The AC doesn't work to good. Also since we have screens that give heat.</p>	<p>No</p>
Tech company/programmer	Hive and five	<p>Yes we have one. It was our colleague that felt that we need something living inside here. It is a bit cozy with it.</p>	<p>The air quality. Easy to be bad air inside here. Too many persons in one room. Might be too silent.</p>	<p>Nice to have something that lives. Also some green areas.</p>	<p>The air problem. We will soon have another room. So we think about the spaces, one room for "development" and one for the silence.</p>	<p>The air quality, and we can't regulate it.</p>	<p>Maybe more plants, but it might be problem to take care of it.</p>
Care facility/hospital	Västra Götalandsregionen , public environment	<p>Customer: No. Here: Some I don't see any problem, consider the allergic reasons. I have recommended them to get in some green plants, especially for entrances and for the psychology department.</p>	<p>Dry air. If it is too warm. Noise. Light. But not a problem with these things at my work. Sometimes I do some test, and show the data for the landlord. Not easy to change our old buildings.</p>	<p>See question 1.</p>	<p>I like the big windows so you can see the environment, in order to get a connection with the nature. The air quality is good here, but in many places they have problem with it.</p> <p>The noise from machine gives 55- 60 decibel, it is a problem in the long term. Many says they becomes very tired and unsocial after work, it is very bad.</p>		<p>No, don't know.</p>

Care facility/hospital	Västra Götalandsregionen , engineering indoor environment	Yes, we have plant service. But we do not have “cut-flowers”. The plants are at the public spaces. We have plants because of the importance of the green color. Also as due to the design of the room.	The light, and good functional equipment.		Sometimes it is cold.		Small rooms.	
Care facility/hospital	Västra Götalandsregionen , Närhälsan	It is very different. Every primary care center arranges their own areas. But often there is a willingness to have plants because they create a good environment. People like plants and the green atmosphere that they create and this gets the visitors to feel welcomed.	It is of importance with green plants, light, materials, furnishings and the type of furniture. The working environment is important and also the sound environment!	See question 1.	In many cases there is problems with the ventilation. It is not built for medical care, the premises are designed for office operations, not for medical care, which has a higher level of visitors.		There are a lot of air and noise problems around.	That there should be a greater aesthetic thinking. A feeling that it has been made professionally. As a patient you reflect about a lot. Broken furniture, etc. creates no confidence. We have our roots from the nature and I think we should have more plants to create a nice feeling.
Plant service / Retailers	Bellis	Customers: The plants are beautiful, the green color make people calm, the increase the air humidity and takes away poison substances in the air. (The customers think about the beauty of plants, but we trying to take the other values as well.) The plants increase the absence up to five present at work. Old knowledge from the end of 1800.	----	----	----		Problem: Dry air from computers and radiation. The plant makes the humidity higher, since the water evaporates. Problem is that bacteria's gets in the air if it is dry. We take care of 17.000 pots in the months, and seldom any problem with them.	----
Plant service / Retailers	Luwasa	Customers: They want to have a healthy work environment. They want to make the environment nice, but sometimes they really want to make the air better, so it becomes clean. Also the employees' absence reduces with 5 -10 percent.	----	----	----		The air quality is a problem today. Some also say that they have noise problem, especially in big offices. Sometimes they just the environment to be nice, then we make a nice pot, But some really want a lot of	----

Veterinary clinic	Råda bot	Yes we have, in order to get a better environment. Problems could be that the dogs might pee on them, also the plants might be a bit unhygienic in a hygienic environment, since it might collect dust. (But we have only plants at entrance where the customers are.)	See question 1.	Nothing at all. But I think it is nice with the plants.	Some people don't like our rest room, since it is in a basement. There is bad light. Many have problem with "bad air", they say. It could be too hot and too cold sometimes, especially in summer and some winter days.	green, then we find a big plant with big green leaves. Little rooms, low ceiling, and to big temperature differences.	Maybe some more light.
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Table 1.1 shows the summarized data from question 7, which presents factors that affect the workplace.

Factors affecting the workplace	Quantity
Noise	14
Light	5
Air	5
Heat	10
Design	10

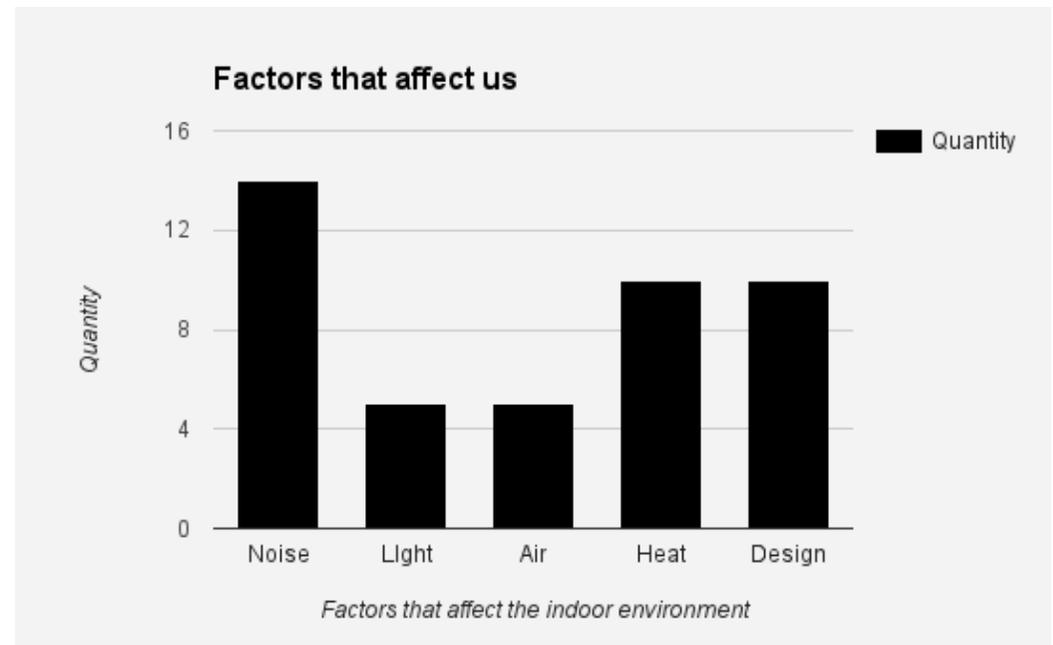


Figure 1.1 represent question 7 and its data of different factors that affect the indoor environment among 25 participants that were interviewed.

Table 1.2 shows the question 9 and its summarized data of participants' thoughts about the indoor environment at their workplace.

Thoughts about the indoor environment	Quantity
Bad air	11
Good air	5
Bad noise	4
Bad temperature	3
Looking good	3

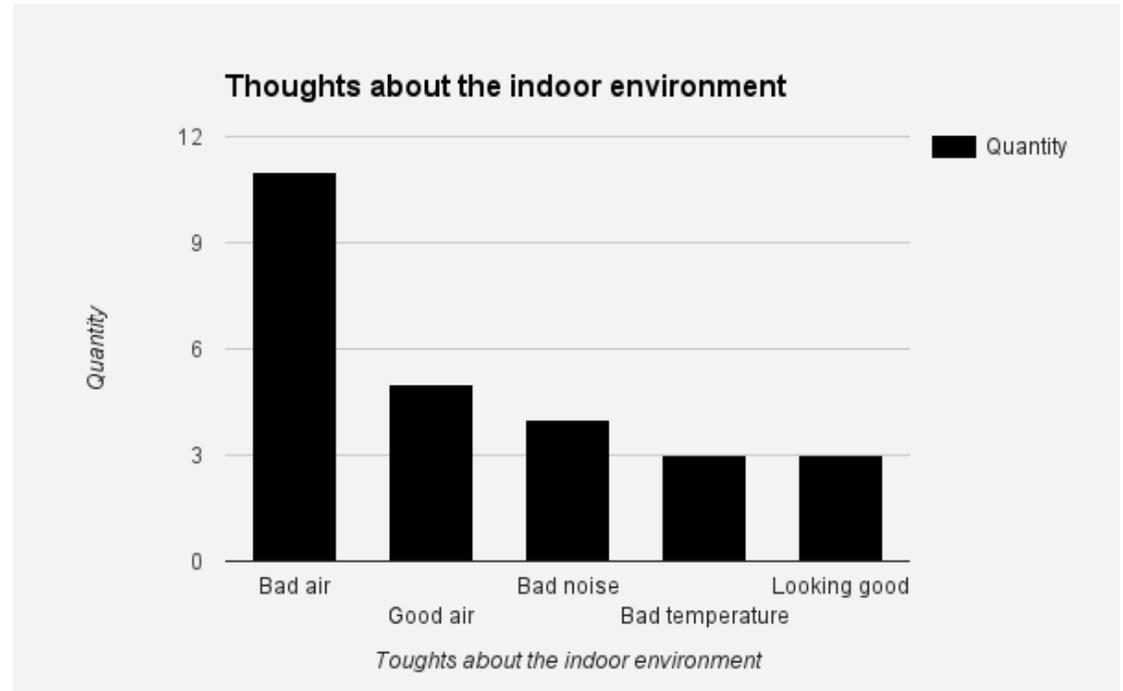


Figure 2.2 represent data from table 1.2. The data shows different thoughts about the indoor environment. As can be shown on the Figure, most companies have problem with bad air indoor.

4. 1. 2 Linking Environmental Challenges – Thoughts from Oboya

When we presented the data of the environmental impact to Oboya, they found it interesting to see that "bad air" at workplaces seems to be a problem in Sweden as it does in China. For instance, Oboya said "The result is positive, because it is in line with our thoughts about the indoor environment in Sweden, and therefore we think the air purification technology in the smart plant wall is of importance in Sweden." and "The problem of noise among the participants is interesting, because the smart plant wall could be used as a partition wall and decrease the noise level at offices". This implies that the data presented in figure 2.2 meets Oboya's thoughts; as the integrated air cleaner increases the user needs of the smart plant wall.

4. 2 Existing service

The existing service is highlighted in order to get a better understanding of the user need of a smart plant wall with its different functionalities. Some functionality will affect the participants existing plants service, therefore it is interesting to see what the customers think about their existing service today. As follows from the table shown below there are six questions dealing with the existing service among 25 companies. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the marked boxes are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 2. Do you choose to purchase or rent the plants? Why?	Question 3. If you rent the plants, what is included in the service?	Question 4. Are you satisfied with the service in the current situation?	Question 5. What is important when you decide to purchase a service that provides plants and care of them?	Question 6. Have you ever changed the plant service?	Question 43. Would you like to buy the smart plant wall or rent the service of it?
Architect office	Liljewall	- No plants or Service	-No plants or Service	- Clients: some clients have plant service and sometimes their plant pots don't fit to the sketches we have made, which is bad.	- Sometimes we collaborate with the plant services, so they make our ideas. - Flexible and easy and also the design.	- No plants or Service	Rent
Car mechanical store	Mekonomen	- No plants or Service	- No plants	- No plants	- No plants	- No plants	If we bought this product it would be of value to have someone that recommend/consult us what plants to have and that someone can see how they are doing.
Property Management specialist to school facilities	Chalmersfastigheter	We rent. It is important that someone takes care of them.	Watering and cutting of plants, etc. To make the plants survive.	Yes we are. The institutions decide if they want to have plants.	The price is the most important. Also that they have a good service, and work sustainable, ecologically, socially and economically.	Yes	Rent
Property Management specialist to school facilities	Chalmersfastigheter	We rent, since someone professional should take care of it, but also if they die it is better someone change them.	See question 2	Yes we are satisfied. We have Bellis.	The quality and the knowledge of the plants. We use the measureable data, like price, quality etc.	Yes we have, it depends on if we are not satisfied.	Rent

University	Högskolan Borås	We rent plant service. We have bought the plants though.	Since no one might take care of them during the summer etc. The have a self-watering system. But they are here every third week.	Yes we are. But once in a time the plants have been looking a bit boring. But in other hand it is just a phone call away and they will come and fix it.	The service. That everything works, and that the flowers look fine.	Yes we have. It was a bit problem when we were supposed to buy a bigger purchase. But they are similar providers. We use both today.	I think this product would be good to have through the renting/plant service company. Since when some plants have to be changed it is better they will do it.
Municipalities	Härryda kommun	Rental service, but some actors buy them too.	No data	No data	Service and price.	No data	We think it would be good as a rental product. But it could also be a product to buy.
Municipalities	Stenungsunds kommun	Rental service, but some employees buy their own plants.	The plant service company watering the plants 1/month.	Yes	Proper care of the plants is important and that the service is good. More other plants to choose would be better.	Yes, due to more options.	Rent
Offices and manufacturing	SKF	Yes we have. But I don't know so much about it. I will check it out.	No data	No data	No data	No data	Hard to say, it depends on the costs.
Offices and manufacturing	Volvo cars	We buy plant service to the public areas. In the office the employees would start to take care of it themselves, but it does not look good - Becomes an illness, mushroom growing, mold, and insects. We are looking at getting into this service again. Public areas are prioritized with the purchase of the services.	We buy the service, but they do not own the plants. We have a full service agreement with the service company.	It is good, we are satisfied. We would like to have this service agreement in other places too.	Price is important. Also important to make a specification, so it will be as we thought. Quality, shall deliver and it is a part of the values to create an attractive workplace.	We change every third year in order to get the best price and value, and to keep the level of service high.	Rent
Logistic offices and storages	DB Schenker	We rent. We have a service contract. If the plant dies, the service company will change it.	Everything around the plant. Watering, nutrition, etc. I think we bought the pots.	We are happy we don't need to take care of the plants.	Price and functions.	Yes we have. Due to the price.	Rent

Logistic offices and storages	TNT	We bought plants. But a supplier give them service once in a month.	That they take care of them.	No, because they haven't give the plant the service needed since the plants have grown too much in the pots, so they all have cracked. Communication problem. They haven't done the things that they were supposed to do. The base problem is that the employee can't cut the plants.	That they do their task. Knowledge about the plants, lights, how to take care of them.	Yes, we have changed due to lack of knowledge from the supplier.	It would be good if it were taken care by another one. Since I have too much to do.
Sheet metal workshop	Godhems plåt	Buy.	The plants might cost 1.500 SEK each year.	Actually, the cleaner maintains the plants. We are satisfied with it.	It need to be green plants, also that the plants increase the comfort factor. The green plants means that someone care about the environment, and that feels good for me.	- No data	Buy
Small offices	GU Ventures AB	- No Service	- No Service	- No Service	- No Service	- No Service	If we decide that we would like to have this product, it would be most beneficial to rent the product.
Spa/wellness	Hagabadet	We buy plants. Because we have the possibility to take care of them by our self now.	---	---	----		Buy
Spa/wellness	Stenungsbaden Yacht Club	We buy them. No renting, but we have rent before. It is better options to decide what to have when buying. Also, one person started to work here which had knowledge to take care of plants.	When we had it, the delivered flowers every week. But right now we rent 13 juniper bushes from a service company, since they are hard to take care of. (Outdoor) It cost around 20-30k a year.	Good is to know that they will come every "x" day that time. When we had the plant service they came here once a month and cut, watering and taking care of them.	Quality of the service, That they understand our business. The companies' environmental certifications. The personal meeting. The economic, that we pay for what we should get.	Yes we have. Due to the reasons on question 5. (Look at the box to the left) Didn't get a good personal contact with the person.	We would not like to have the product at all, but I think a rental option would be beneficial.
Large office	Cowi	We rent plant service.	Our leasing contract includes that someone comes and take care of our plants once a month. During the	We are satisfied with the service today. However, the service is a little bit too expensive. The small plants cost 30	That they look after the plants properly and that it is a reasonable cost for the service.	Yes, we just changed the supplier since they were dishonest.	For us it would be better to lease the product than buying it.

			service irrigation, cleaning, and replacing plants are included.	SEK each per month.			
Large office	Sweco	We lease everything.	Everything about to make the plants look nice.	Yes we are very satisfied.	The service level is high, then the price. We want to have a very fresh office.	Yes we have. We have a framework agreement. We changed supplier because the new supplier had a total service of many things.	Rental service
Tech company	Got Design	Not here, but we had it on our old place. Then there was a company that watering the plants.	- No data	Yes	It is important that they fit in to the environment in our office. The visualization is important, that they look good.	No plant services.	- No data
Tech company/programmer	Hive and five	Buy plants.	- No data	- No data	The plants cost 2000 – 2500 SEK. Just for a plant and that is expensive. The idea behind purchasing this flower is to make it a bit "soft" here.	No plant services.	If we were a bigger company on a larger surface we would have rent the plant service.
Care facility/hospital	Västra Götalandsregionen, public environment	- No data	- No data	- No data	Service and price.	- No data	Leasing.
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	Yes we have for the public areas. But in the private offices the employees put their own plants there.	- No data	- Yes we are.	Service and price and knowledge. Sustainable purchasing.	- Yes we do it every third year, if we are not satisfied with the service provider.	Leasing.
Care facility/hospital	Västra Götalandsregionen, Närhälsan	We rent the service for maintenance and buy them also. It is seldom that the care of plants work well when the staff themselves do it.	- No data	It works fine.	We do not have mandate to decide for the plants but we do not have the same structure everywhere. But the most important is that the service agreement are delivered as it should.	Procurement is made continuously.	Rental service.
Plant service / Retailers	Bellis	-No data	-No data	-No data	-No data	-No data	-No data

Plant service / Retailers	Luwasa	-No data	-No data	-No data	-No data	-No data	-No data
Veterinary clinic	Råda bot	We buy. Since, it is cheaper and easier. It is not an important thing in our business. "It is not a showroom"	No rent.	We are satisfied with our plants.	They should be easy to take care off, of good quality, and green.	No rent service.	Buy.

Table 4.2.1 shows the summarized data from question 43, which present if the participants buy plants or if they rent plant service.

Existing Service	Quantity
Purchase	5
Rent	8
Both	6
No Service	4
No Data	2

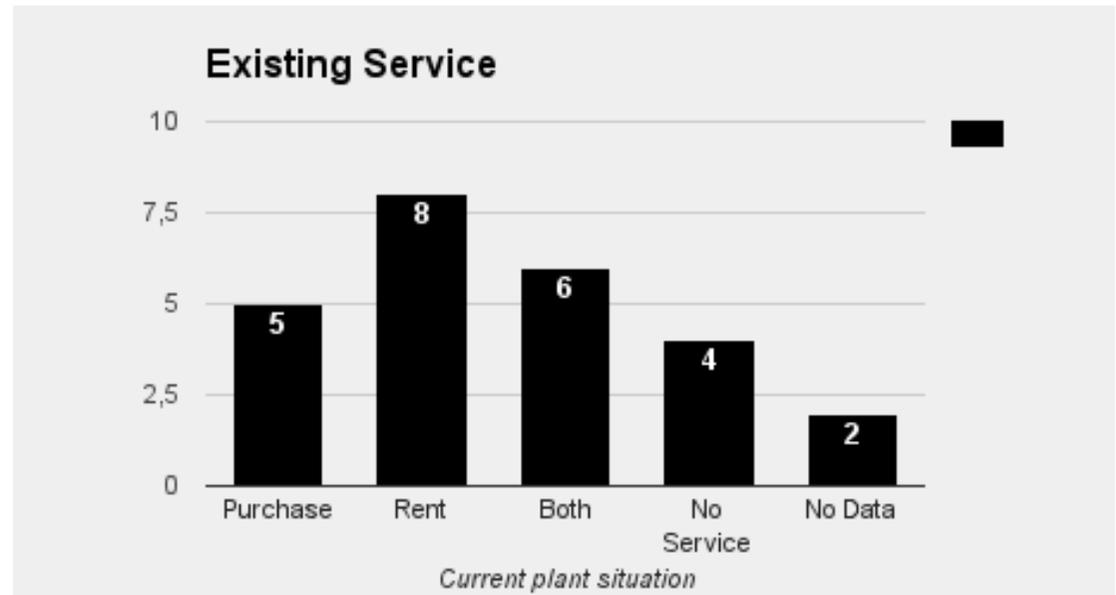


Figure 4.2.1 represents data from table 4.2.1, which shows if the participants buy plants or rent plant service. As the figure indicates, 8 people rent plant service.

Table 4.2.2 present questions 2, which describes if participants want to buy plants or rent plant service.

Buy the product or rent the service?	Quantity
Buy	2
Rent	17
Neither of it	1
Cost dependent	1
No data	2

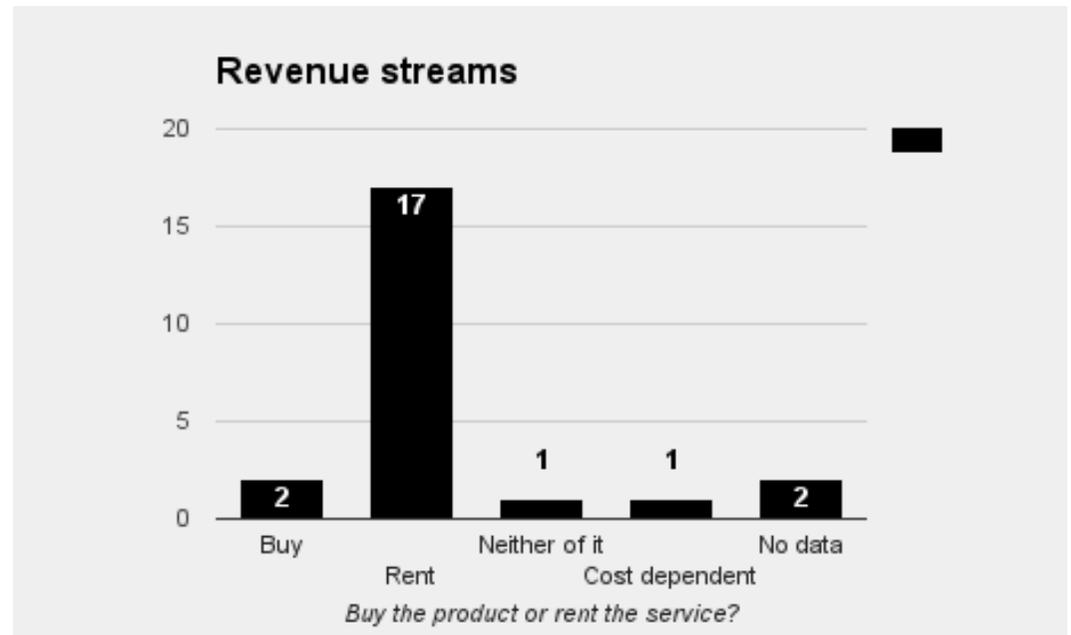


Figure 4.2.2 represents table 4.2.2, which describes that there were most participants that want to rent plant service.

Table 4.2.3 present questions 43, which highlight the most importance factors when purchasing a plant service.

Important factors when purchasing plant service	Quantity
Service minded	4
Good delivery of functional service	9
Quality and knowledge of plants	4
Price	9
Work sustainable/ecological/social friendly	1
Understanding of customers business	2
Achieving green well locking spots	4
Environment certification	1
No service/plants	3
No data	4

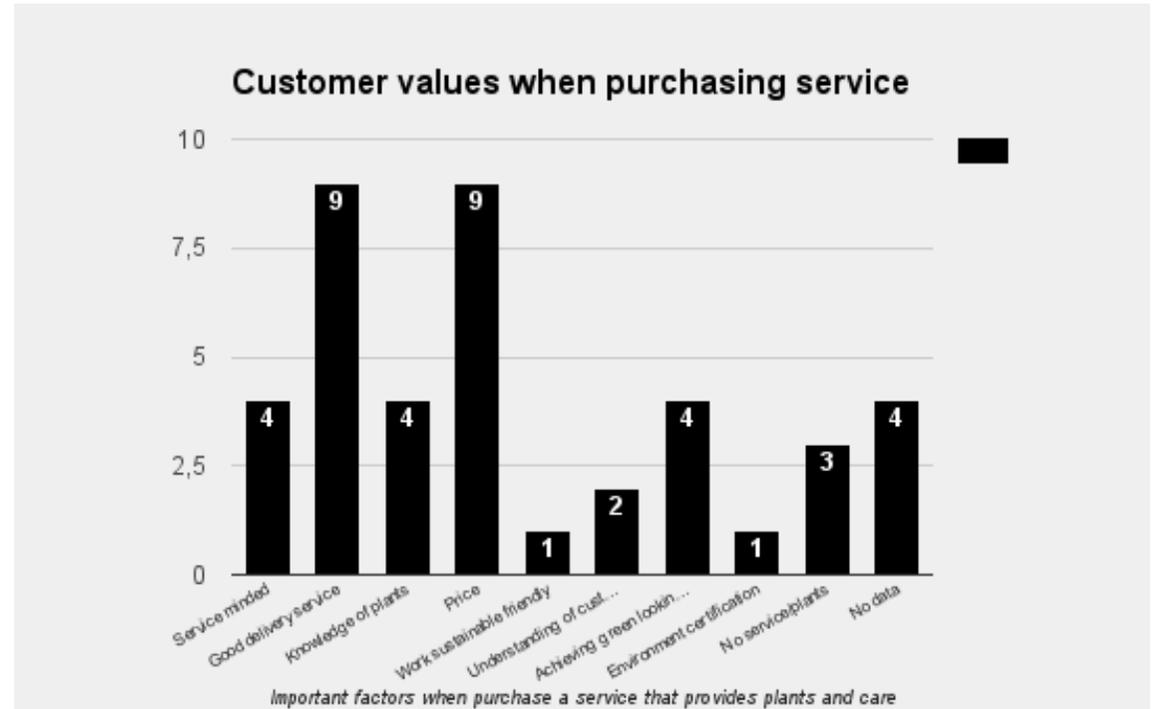


Figure 4.2.3 represents data from table 4.2.3. As the figure indicates the price together with a functional and good service are the most importance factors when firms purchasing plant service.

4. 2. 2 Linking Existing Service to Challenges – Thoughts from Oboya

When the results of existing service were presented, it was in line with Oboya’s thoughts. This because the data indicates that more people are interested to rent a plant service, which they also believed in. Additionally, Oboya also said how they would do “Perhaps we should partner up with a plant service firm in order to get a fast diffusion of the smart plant wall into the Swedish market, since they already have existing network of customers.” Another interesting data Oboya mentioned was that customers think it is important with good service when choosing a plant service company. Oboya said “The high level of service is important for the customers, which means that our smart plant wall would fit into the customers need, because it increases the service by its smart functions.” An example of this is the automatic water system, which will decrease the need of watering the plants. This is a win-win solution, since it increases the level of service (the smart functions) and decreases the price of the service for the customers and suppliers (don’t need to watering the plants as often as before).

4. 3. Air

In order to get a better understanding of the customers need for the air cleaner, it is of importance to highlight questions that will result in data that can be used for decision-making around the technology of the air cleaner. As follows from the table shown below there are nine questions dealing with the air quality and the need of the air cleaning system that is integrated in the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the marked boxes are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 12. Can you regulate the ventilation in any way today?	Question 13. Are you able to regulate the humidity today?	Question 14. Are there any other systems that you use regards the indoor environment today?	Question 15. Would you like to regulate the air quality indoor today?	Question 16. How important do you think it is to measure and regulate the air quality indoor?	Question 17. Are you interested to achieve a cleaner air in your indoor environment? In such cases, for what price?	Question 25. When choosing a smart plant wall, how important is it that the mechanical air cleaner is integrated to it?	Question 34. How much value do you think that the air cleaner have in the plant wall?	Question 36. Would you be willing to pay more for a mechanical air purifier inside the smart plant wall?
Architect office	Liljewall	No - Only the windows. Customers' usually have problem with their ventilation. It is hot and cold a lot. Also loudness.	Nothing today. -We think plants works very well in this situation.	Light regulations - for windows	Yes	Very important and it would be very good to do it. Also "hard" with all the parameters. But maybe no, depends on. But not accessible for everyone in the office, since it might be more "complaining".	Yes	- It is a bonus, a good selling point! - Might be good to be able to choose.	- No data	- No data
Car mechanical store	Mekonomen	Yes we can. With a control.	No. Only heat and the coldness.	No	No one have a problem with it.	If we got a problem with it, then it would be nice to have it.	No, we have good	- It is of value. But it wouldn't be of need in our shop today.	- No data	- No data

Property Management specialist to school facilities	Chalmersfastig heter	Yes in some places. We are trying to improve this. For instance, in some offices we have local air regulation system. But we usually use a central system to regulate the air flow and temperature, etc.	No. There are other problems with humid air, like legionella.	Light regulations for windows Attendance system	Yes, when we renovate buildings we also like to install this kind of systems.	Very important.	Yes, but I don't know for what price. I would say it have to be compared to other solutions.	It is of value.	- No data	- No data
Property Management specialist to school facilities	Chalmersfastig heter	Yes. Central system, which is automatic. (The new ones) But the old buildings are regulated through time.	In some places where they need it. For instance in the lab, pretty expensive though. But not in the offices.	Sunlight (Sun protection)	Some places. For instances in the environments with many people. Where there is a big variation with a lot of people.	We do it all the time. Not all particles, but in CO2 and Temperature, and some air humidity. We use measurement equipment installed in the ventilations. (In the new ones, no in old buildings) the data goes to the computer which later automatic.	Yes, we are always. But I don't know for what price.	It might be some places where this air cleaner would be good. But not general, not all places. But I want it to be a optional.	- No data	- No data
University	Högskolan Borås	Nothing that we can regulate. Only central control of ventilation.	No we can not. We have dry air in the winter.	Nothing I can think about.	We get the help that we need. So we are not in big need. Perhaps the textile school, since they have problem with the textile particles in the air.	Yes it is good to see the values. Since if someone feeling bad it is good see if it is the air. It is the "Akademiska huset"/the owner of the buildings that do this tests, if we ask them.	- No data	It would be positive.	It is good; it is the valuable thing with this product. Since I can find a similar plant wall that doesn't have it. Good to have an optional though.	- No data
Municipalities	Härryda kommun	Yes, where we are. But generally there is not.	No	No.	We already do that when someone complain. We make some tests for the air but also for the airflow. We use a machine, which measure	It is important. It would be good to have more control of it, since in some rooms are only used 25 percent. Here could we be saving some energy of not warming it up.	- No data	Not so much.	In some places it would be of value, especially in some places where many people are. Good to have it in the computer rooms as well.	- No data

					CO2, etc. Also temperature, and the air humidity. The best is to be around 40-60 percent humidity in the air under 20 percent it is recognizable.	But at other places we need really good systems, where the airflow should be on all the time.				
Municipalities	Stenungsunds kommun	No, only the landlord can do it. It is central regulation system.	No, but it would be good to do that.	No	Yes, it would be good.	Important.	Yes, I would.	Not so much.	- No data	- No data
Offices and manufacturing	SKF	No. It is connected to the central system. But it depends on the building.	Not what I know. I haven't heard anything about dry air from employees.	No.	No, I don't see any need of it. If it was a problem it would be good to see the data.	I believe it would be good to know it is ok.	Yes, it could be good in some places. Sometimes it could smell food from the ventilation, it comes from the kitchen.	It is positive!	- No data	- No data
Offices and manufacturing	Volvo cars	We do that today. I guess it is best to regulate it from the central system in a big working place as this.	No.	No.	We do that today with our central system.	It is important, I need to know if there is a problem or not with the air.	Yes, if the air is not clean I would like to make it better.	Yes, but it depends on the price. However, I can see a value and a need of it.	It would be of high value if we had problem with it. But it depends on the costs compared against the plant service, since I see this as a plant in our companies.	- No data
Logistic offices and storages	DB Schenker	Yes we can, in some rooms.	No, but we have had measurements, and we have very good air here.	In the warehouse we measure the CO2, if there is too high concentration a system will start a fan, etc.	We do this already in our current situation. We have also alarm system to it. Especially since we have some food clients.	Very important. Otherwise we can't have some business we have today. In the offices we don't make any measurements.	- No data	It is the most important, that would be the reason why we would buy it. It would make the working environment to the better.	- No data	- No data
Logistic offices and storages	TNT	Yes, in the conference rooms we can change 3-4 degrees. But then we also have a central system for the building. However, it was the	No we don't have that. It could be good to have it, but we don't have any problem about it right now.	A forces air system, which can be regulated in some rooms (3-4 degrees)	Yes we can.	Yes, it could be a good way to communicate with the landlord.	- No data	I think it is interesting and nice with a new perspective of this product, since there are already others that sell plant walls. This function would differentiate it from the	That is the whole thing. It is important. Good feature.	- No data

		cheapest system which just have the air in one direction. (bad)						others products in the market.		
Sheet metal workshop	Godhems plåt	No. We can't do that.	No we can't. During the winter the air is very dry. It is a problem for me.	Yes, Air pumps - which filter the air.	Yes it would be nice, now when you ask me. But it is nothing I have thought about.	It is important to have these air cleaners with filters, which cleans the air for us. It would be nice to regulate the air.	Yes we are. Perhaps put 20.000-25.000 SEK for it. The air filter machine we bought cost around 20k, it make cold air to hot at the same time as it filter the air.	Compared to the visualization and the air cleaning system I believe the air cleaning system is of higher value. I like it. It is absolutely positive. It makes the product more valuable.	- No data	Yes, since it will be another product compared to others in the market.
Small offices	GU Ventures AB	No, not in the current situation. It is centrally controlled and switched off at five o'clock in the afternoon. Then it ends the to fizz.	No.	No.	No, we would like that it already is controlled and checked.	I believe it is the landlord's task, not we as a tenant.	Yes.	Purification function is good to have.	Purification is a great feature.	The purification is good but the measurement is less important. It is not a "must have".
Spa/wellness	Hagabadet	Yes we can. But it is a system from 1997, and it not so good. But it works.	No, we are not in need of that.	Yes we work with fragrances. We have big pumps that emit fragrances. In order to make a smell-memory for the clients for branding purpose. However, people like it, consider those who are allergic against it. Some compare it to a sugar-pill of energy.	Yes. It would be positive. We have had some consultants here, which have measured the air quality.	Very important.	- No data	Probably not for us here.	- No data	- No data
					We work a lot with different lights, in order to get the right feeling.					

Spa/wellness	Stenungsbaden Yacht Club	Yes we can.	No, we don't.	No.	Yes	It is very important! We already do that, a person comes with a machine and test that.	Yes it would be nice. But to have more control over it. It would be of value of us, but we rent this house from a landlord.	I do not know.	- No data	- No data
Large office	Cowi	We cannot control the ventilation today. Only the landlord can change the ventilation.	We have not a system that can increase the humidity. We have not experienced any problems with it but there could be a possibility that we have dry air.	No.	We have not thought about it since we have not got any questions about it or felt the need of it.	We have not thought about it since we have not got any questions about it or felt the need of it.	I have not even thought about it so I cannot answer that. But maybe you might like to. (COWI's office is next to a heavily trafficked road; the question was asked if they were affected in some way of it regarding particles but nothing that she felt the need to fix).	In some cases, it feels important. For example, when you want to fix a problem regarding the air quality or when the staff need elimination of particles in the air.	I cannot answer that question.	If the product purifies and if it is good for the indoor climate and humidity as they say, it is a value.
Large office	Sweco	No, we use a central system in this building, which means that we have to contact the landlord.	No, we don't.	No.	We do it. But then we have a person who comes here and makes some tests.	I think it is important, since we doing it today. We inform the landlord when we think there is something that is not ok. This is because we want to get the right setting of air and temperature in this new building.	Yes, of course. But I guess we already have good air.	Not so important.	- No data	- No data
Tech company	Got Design	Can't do it our self. But we can call the owner of the house, which can regulate the heat of the buildings. It is a central regulation system.	Not a system. But one employee has used a water pot in the entrance. We haven't measure anything either.	No	Yes it would be good. But I believe it is the house owner's responsibility.	Yes, it would be good to do that. But complicate to have too many that can regulate it.	- No data	It could actually be a good thing.	It is an extra valuable thing.	Yes
Tech company/program mer	Hive and five	No, we can do it our self. It is central regulated.	No we don't have any systems about it. But we haven't thinking about the dry air.	No	Yes	Noting we think about today.	No, it hasn't been a prior question for us.	Would like to see data on how fast the product could change the air. The air cleaner would be an extra valuable thing for the product for those who	- No data	Yes I would do that.

Care facility/hospital	Västra Götalandsregionen, public environment	No, not generally.	No, but many complain about it.	No	Yes	Yes, it is important. Because then I can tell the employees about the air quality.	Yes	have a problem with it. - I would like to have air cleaner system inside it, it would be good inside here. It would be good, I am positive to it.	- No data	- No data
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	No. But we a central system.	No we don't.	Only the light.	No, not we as a hospital. But I think it is a real estate question.	It is important.	Not really. Guess we already have it.	Not important.		
Care facility/hospital	Västra Götalandsregionen, Närhälsan	- No data	Maybe they improve the air with steam in some primary healthcare stations. We have heard it a lot that it is a problem with dry air.	I do not think so.	Yes, it would be really exciting to be able to do it. However, we have no experience of it in our current situation.	It is great to be able to do it. Heating and cooling is very personal though and we do not want it to be regulated up and down. But as a person it would feel very good to be able to regulate it.	Yes absolutely. We have ventilation problems that include for example odor, soot and exhaust particles. The air quality that exists far from the city centers would be optimal to achieve but everything is about economics. I can unfortunately not provide you any price.	It is of value.	It is relevant.	- No data
Retailers	Bellis	Few can do that. Then they are in a modern and new house.	----	----	----	They do not do that, what we know. I believe it would be a good thing for the companies.	For the people who read knows that plants are good for the indoor environment.	It is very important, and I guess it will be more important in the future. I believe it can be interesting for the customers. It is very good. Would also be good to have at home.	High	Yes

Retailers	Luwasa	----	----	No.	----	No, I don't think so. They have always problem the air, but it is the owner of the house that has the responsibility.	Yes.	For many companies it might be a good thing to have since they have a lot of problem with the air. Then it would be of value.	----	----
Veterinary clinic	Rāda bot	No, not what I know at least.	No, I don't think it is needed.	Not really.	Yes, it would maybe be a good thing.	Maybe not a big value, but if we got problem with it then it would be good to see what kind of air and particles we have indoor.	Yes.	I think it is good that there is one, it makes the product a little bit unique.	I think it is of value. In a scale it would be a 5 out of 10. But if there was another one without the air cleaner and if it was a lot cheaper then I guess I would take that one.	----

Table 3.1 presents the summarized data from question 15. As the table indicate the data shows how many participant would like to regulate the air quality indoor.

Regulation of air quality	Quantity
Yes	15
No	8

Table 3.2 presents question 16. The question highlights the importance of the function that measures the air quality. As seen in the table, the majority thinks it is of importance.

The importance of measure air quality	Quantity
Important	18
Important if it were a problem	2
Not important	3
Not reflect upon it	2

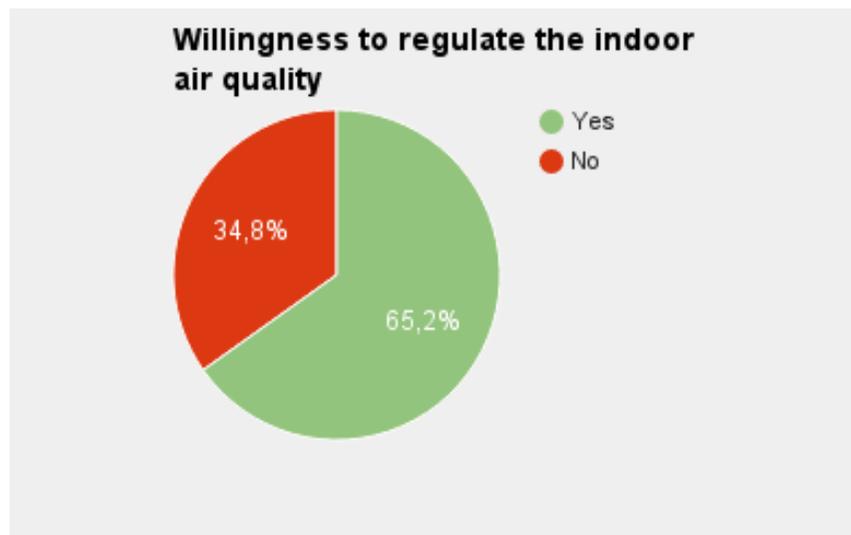


Figure 3.1 describes the willingness to regulate the indoor air quality. There is 65,2 percent of the participants that would like to regulate the air quality.

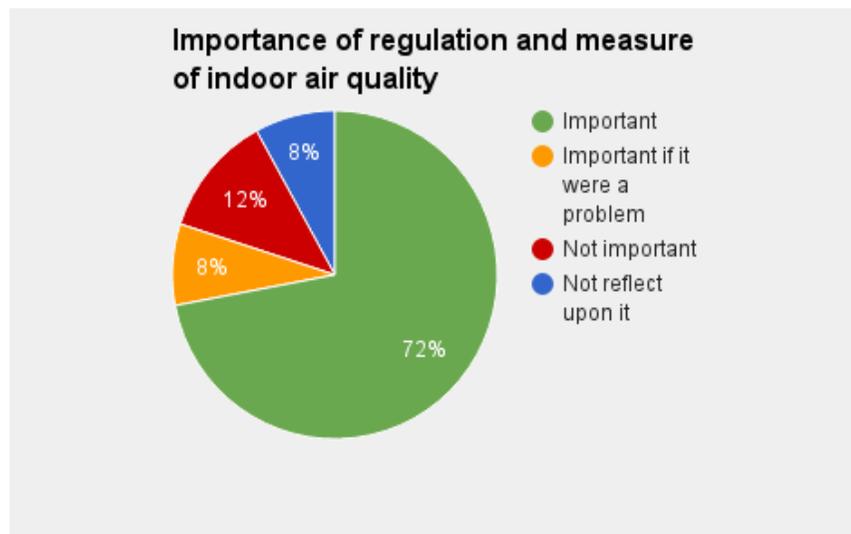


Figure 3.2 illustrates the data from question 16, which also is summarized in table 3.2. As indicated above, 72 percent would like to measure the indoor air quality.

Table 3.3 summarize question 25, which is about if the participants would like to have an integrated air cleaner in the product.

Integrated air cleaner	Quantity
It is advantageous	13
Not important	5
It is a bonus	3
It is of value but not in our business	1
It is of value but not everywhere in our business	1

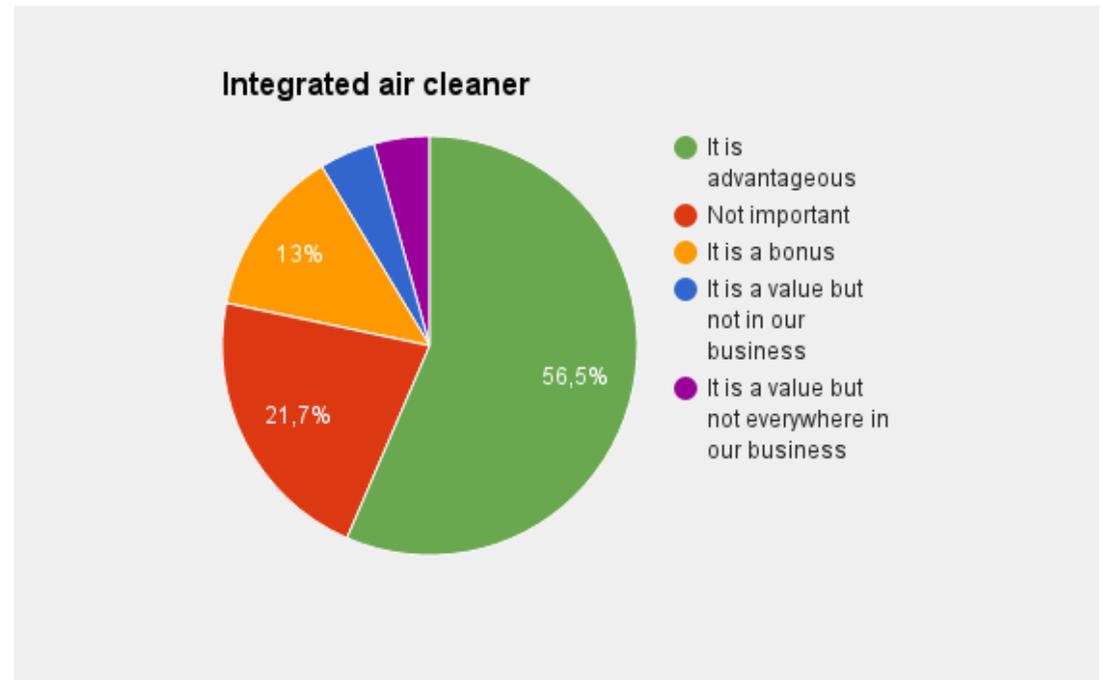


Figure 3.3 illustrates the summarized data from question 25. As it shows the integrated air cleaner is advantageous function in the smart plant wall.

4. 3. 4 Linking Air Challenges – Thoughts from Oboya

When we presented the tables and figures of 3.1 – 3.3 to Oboya, they indicated that the data was in line with their thoughts of air purification system. The thoughts were that Oboya believe the air cleaner is a valuable technology in the smart plant wall, since it increases the value of the product, and thus it is not only a wall with plants – it is a smart plant wall. For instance Oboya said, “The smart functions increase the value of the product, and as the data shows it seems like the Swedish market also believes so.” The conclusion of this is that the user needs are similar between Sweden and China regards the smart plant wall, which indicates that one challenge in frugal innovation literature “offerings does not fulfill target customers needs” can not be validated in the case of the smart functions of the smart plant wall.

4. 4 Design

The questions in this table highlight the design of the smart plant wall. The design questions are important because it will give valuable data of what the Swedish participants think about the design from China. As follows from the table shown below there are eight questions about the design of the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the boxes marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 18. a) What size would fit you the best?	Question 18. b) What design would you prefer?	Question 18 c) Would you prefer a moveable smart plant wall?	Question 18 d) What do you think about the color and material?	Question 19. Would you like to have any customized product?	Question 20. Would you think any lightning of the product would be of higher value?	Question 27. Do you use any equipment to separate areas in your business today?	Question 28. Would you think that soundproofing would be of value in this product?
Architect office	Liljewall	Good sizes, especially in the restaurants. Photos look too oriental / too much for the office. 1.60 is good since you can see over it. Look at Abstract / Glimåkra. 1.40m as a rule in libraries for safety reasons.	It looks good. - Maybe the finish structure could look good. - Ecological plastic if it is an environmental product. - Maybe steel, tree, glass fiber. Since we work with "identity" it is hard to get one that fits them all.	Yes. But could also look ugly if you can see them. - Need to be able to lock.	- Depends on the finish, structure. We are very sensitive about that. - Also black and gray. - The material needs to manage the plants too.	- Yes (For our customers)	- Depends on how it looks like. - If it is a little bit ugly we will not use the product. - If the module looks nice it is positive.	- Usually we think the screen doesn't look good. - In the offices and also in dining rooms.	- Yes, but compare to what? - Would like to have data about how much it "eats" up the sound.
Car mechanical store	Mekonomen	Depends on the place I would say. Good there are three different sizes.	- No data	Yes, it is of value that the product is able to move.	It would be good if we could have the color that we use in this shop. It is important. - Plastic is good! - Black color in this shop. - 90 wide is good (Standard in shelves)	- Yes.	- Yes it would be of value. We work a lot with lightning today. - Good as a optional with lightning module.	We don't use. It would be more on the way if it was a separate equipment in our place.	It would be good to get noise away. But in this product it wouldn't be of value.
Property Management specialist to school facilities	Chalmersfastigheter	Good with different sizes. I also believe there should be even a bigger size, a hole wall! It is good that it is not too deep.	It is good if it was optional to have plant on both sides.	It would be good.	White is good!	No. I think it already looks good for us. It is already enough option to choose between.	It would be good to have LED light, but consequently it would be less flexible. I could see the light as an option.	Yes, it would be good since we already building flexible facilities.	- No data

Property Management specialist to school facilities	Chalmersfastigheter	The sizes are good. It would be good as a separate tool.	It works fine.	It is good, and bad. Since some people might take them away. But in the offices it is good that you can move it around.	White is good. Positive if you could choose the material in order to fit in a particular place.	It would be of value. But as this standard this product works perfect.	Absolutely, it would be good as an option. Since it might not work in all environments, such as in the offices.	Yes we do. Due to acoustic reasons and visual reasons. If you can show that it kills noise as much as the other "screens", it would be really good. - Data of it	- No data
University	Högskolan Borås	The sizes are good.	Depends on where it stands. But it works fine in many places.	It is good.	White, black and gray. Material: Plastic works fine if it is a good plastic.	They work fine. But if I would have it close to some windows it would be valuable if there were a round one.	It is good to have, at least optional.	This could be a good alternative.	It would be positive. Especially in the offices - to kill noise.
Municipalities	Härryda kommun	It is good it is not too deep, since it doesn't take too much place. But it would be good that it not will fall down. The sizes are good.	It is good design	Good if it is moveable, but it have to be able to lock the wheels.	White is a good color. Plastic is good.	Perhaps some light functions in them. Otherwise they are good.	Yes, good to have an option.	Perhaps in some places. But then we don't need the smart functions maybe.	
Municipalities	Stenungsunds kommun	No	Not good design, it's awful.	Yes	Plastic White	Yes	Good with lightning	Yes, it would be of value.	
Offices and manufacturing	SKF	The size seems good. Works fine for us.	Yes, it would work fine in big spaces.	Not so necessary, but it could be good when cleaning, etc.	White is nice. Material: Plastic	Not necessary.	It could be an optional.	In some places. I could see this as a separate.	It would be of value.
Offices and manufacturing	Volvo cars	I like to work with the standard models. The sizes are good.	It looks good.	Normally I don't want everyone to move the inventory. Since things start to brake when people move it too much. But of course, they should be able to move, but not too easy for everyone.	It is good. The white works fine.	No, it is necessary.	There should be an option, but it have to be in line with everything else in the room. But normally I don't like to put light on plant that is indoor.	Yes we use. The separate - wall should not be higher than 1.50 - due to security rules, which we follow. (These are our fire-rules) But we can have higher plant walls against walls.	It doesn't work with this one.
Logistic offices and storages	DB Schenker	We can't have this one in the warehouse. The sizes are good.	It looks cool, but too much flowers in it right now. The aesthetic appearance: If it going	Good if it is.	White, black and gray. Plastic is good and cheap.	Not a need. Good if it is straight, green and easy looking.	It would be good if it was integrated in it.	But as a separate it is too big for us. But in office it would work fine.	

Logistic offices and storages	TNT	The sizes works fine, But the bigger one (1.90m) is too big for our offices.	to fit in Sweden it have to be a neutral look. Need to minimalistic and be green. The works fine for me. But why not a round model?	Yes, it is preferable.	The color is not so important, since we want to have green plants in our offices. But I would like to have White, black and gray colors. Today I would choose white color. The material: Should be quality material. So I guess this plastic is good.	Yes, it would be good.	Absolutely, also good if it is integrated.	We don't use it today. But I can see this product as a separator.	Yes, it would be good.
Sheet metal workshop	Godhems plåt	They are good	It looks nice	Yes, it is a very good feature.	White is good, it looks fresh. Perhaps black. Plastic is good for us.	No and yes. Yes for the one that could be hanging on the wall. In this nature style we don't have any space for it in the workshop. But it works fine in the stuff room or the office. It would be nice to have one designed for a corner.	Yes, if it looks better. And the lamp should be integrated into the product. I thinking about the effect you can get from the Christmas light during the winter, this product could give the same feeling.	No.	Yes, definitely. It would be very voluble.
Small offices	GU Ventures AB	- No data	The product in its current form is not appealing.	It is not so necessary with portability in our environments. We would rather not have the product on the floor at all. Instead we would appreciate if there was a possibility to have them on the walls.	White is good and it works with plastic. But you want to get the innovative feeling with this product and then you need to use something new. Rubber could be a material or any soft material that you can dye. Any material that feels innovative would be beneficial to use.	Yes	Yes, it would be an added value. Lighting is important! I envisage that it could come from inside so that the green color of the leaves can be highlighted when it becomes dark. You can see the light but not the lamps. Classic spotlight as for example picture lighting would be nice.	No	No

Spa/wellness	Hagabadet	It might work in some places.	It's ok.	Not necessary.	Material that is resistant against plants and water.	It would be good. We have already plant walls that a carpenter has built for us. We have both fake plants and real plants in it.	Putting up the lights as a rail in the ceiling would be a nice combination. Yes, light would be good to use in order to make the plant survive.	We don't have any today. But I can see this product as a separator.	Yes, absolutely. Especially in offices. And maybe in some places here as well.
Spa/wellness	Stenungsbad en Yacht Club	It depends on. I wouldn't choose 1.20m, but 1.60m seems good for us.	I believe it looks really boring. It doesn't fit in to here. Looks for me as a product for the municipal or the swimming house.	- No data	- No data	Yes. "Not this standard"	Yes I would like to have some light that makes the product survive. But I would not like to have a lamp from the product, rather from the roof or something. But it would be good if they have some option that we can choose.	Not this one as a separator.	No, (I see the palm - tree in front of me) But if it was possible it would be good.
Large office	Cowi	Good.	I think that it might be a little bit edgy if you do not what it to stand against a wall. It would be advantageous to have a round shape in the basic range.	Not really, because we will not move them. They are supposed to stand where they get the best circumstances of live.	White are always a good color. It would be advantageous if there were a color map so the customer could choose a specific color. I like metal, any stainless but it would be advantageous if the pots could be changed to fit what's modern at the moment.	I think standard solution is fine. As a purchaser, I feel that I want to keep the costs down.	I do not believe that light from an integrated module would look. Lights would rather be installed in the ceiling.	Yes we do. We use screen walls, but we use something called "flakes" that are aesthetically sound absorbers.	There is of importance to know how well the product can absorb sound with some form of statistic.
Large office	Sweco	I think it is good there are different sizes on the pot.	It is "okey" design. To be practical the form is good.	It is good to have wheels since we sometimes change the inventory here.	White is good. Plastic is good, but there should be other options.	The whole product should be customized. But I think it is good today. I would like to have space between the plant walls.	It would be good, in order to make the plant survive. It could be integrated in the plant wall.	Maybe, I think it could be that. At least an alternative.	It would be good if you could see how much it would decrease the noise.

Tech company	Got Design	There should be a window size too.	My first feeling was that this one can you buy from Ikea for 85 SEK. This doesn't look so exclusive out.	Good if it is. Especially when cleaning, swiping the floor.	Good to have many different colors. White is ok, since you can have it everywhere. But for design offices with architectures might want specific colors, also with a logo on. Material: No, the plastic is good.	Yes it would be nice. But it might be very expensive. But good for big customers, like construction companies, which might buy more than 1-2.	Nothing that goes out. Should look nice and be "hidden".	Not use it today. This smart plant could be a possible separator.	I think it is good as it is.
Tech company/programmer	Hive and five	They are good sizes.	It looks nice. But to choose what to have inside would be good to do. - Thinking about whether the white color/plastic will be after a while, how will it look like?	It would be good to move it by myself so I don't need to call a technical.	The white color melts in the environment.	Perhaps in some offices.	It would be good to have a light as a optional choice.	Maybe, in the office space. But I might be too much in some situations.	Guess it already does that. In open spaces it would be of value.
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	No	It looks god.	Yes it would be good.	Yes, other colors would be good. Other material would be good as well, since plastic is bad for environment. Maybe tree would be good.	Yes	Light would probably be necessary to make it survive.	We don't use any today. But I can see this product as one!	
Care facility/hospital	Västra Götalandsregionen, public environment	It works fine, good sizes.		It is good if there are small wheels, it has to be safe.	White, black, and grey color would work. Plastic works fine, but it has to be of right quality. Should not look too much "Ikea".	No	No light function. The light can be fixed at the place.	Yes we use.	Yes
Care facility/hospital	Västra Götalandsregionen, Närhälsan	The size depends on the situation but the different sizes are good. The shape is also good.	The shape is also good at the moment.	Regarding the portability it is beneficial if it is not too mobile.	I do not like the white color. It is too bad that the product contains of so much plastic. It would be preferable if the product were produced in renewable materials. Think more ecology.	To get it proper and fit well, it would be beneficial to get it customized. It could be a very nice installation if it is made for a specific environment.	It would be beneficial if the lights were designed to look less like "cans", I do not like that shape which you can see on the top of different plants sometimes. The lights should be more innovative and tasteful.	Yes we do. This is because we want to create small private areas. There is often that you do not want to sit around others in specific areas. Separation furniture is very trendy at the moment. We could see this product as a	It would be very good. But it is of importance that it is environment friendly.

Retailers	Bellis	Yes	Good	Not good to move around. They might put it to a worse place, then it might die.	Good with plastic, if you can paint it. However, white, black and gray would be good.	Not really right now.	It would be good to have an integration of the lamp.	separator. We use it today, and this could be an option.	It is good, but it is not the most important when our customers choose to have plants. But it is enough with the normal noise removal as it is.
Retailers	Luwasa	The sizes are good. Also good sizes since we are able to take care of them, so we don't need and ladder with us. Good for the offices.	We like the design. It is ok.	Electricity? Problem if the customer wants to have it where electricity cable is not reachable. For instance, if the customer is going to put in other inventory then it would be good it can be moveable. Also, it might be problem if they move them around too much, since the plant might die to bad conditions, then someone have to pay the cost of it.	Depends on how the plastic look like. Color: The white looks the best. The standard pots are in black, white and gray, could be good to have.	Yes, it would be good. But it depends on the price.	Yes, it has to have it. Otherwise it wouldn't survive. "Normal light would not be enough for this one" It has to be a light at least 1,5m from the plant so it can light up the whole wall. "It have to be a light to make the plant survive"	Yes we work with it today. "There are already so many in the market today, but I can not decide if this product would be better for that then others"	It would be good if it were better. But already today the plants minimize the noise as they are. But it would be of value if it could attenuate noise.
Veterinary clinic	Råda bot	I like the sizes.	I like the design, it looks nice, but I don't like the flowers in it.	Yes, it is good. Positive to be able to move it around.	Plastic works fine. Not like the white so much since it might be hard to keep clean. I rather have black or gray.	Not necessary. They are good.	Yes, to have it is an option. It might be beautiful to have it. But not so very important to have it.	Yes we use. I think this product is good for this.	Yes, it would be of value if this product decreases the noise.

Table 4.4.1 presents the summarized data from question 18 a, which highlights how many that like the sizes and also how many that would prefer a customized solution of the smart plant wall.

Sizes	Quantity
Good sizes	19
Not good sizes	3
Customized	13
Not customized	10
Other design solution	<ul style="list-style-type: none"> - Bigger size - Height of 1.40m - No overturn - Different sizes on the pot - Little size for the window

Table 4.4.2 is data summarized from question 19, which presents how many that want to have a customized smart plant wall.

Customized product?	Quantity
Yes	13
No	10

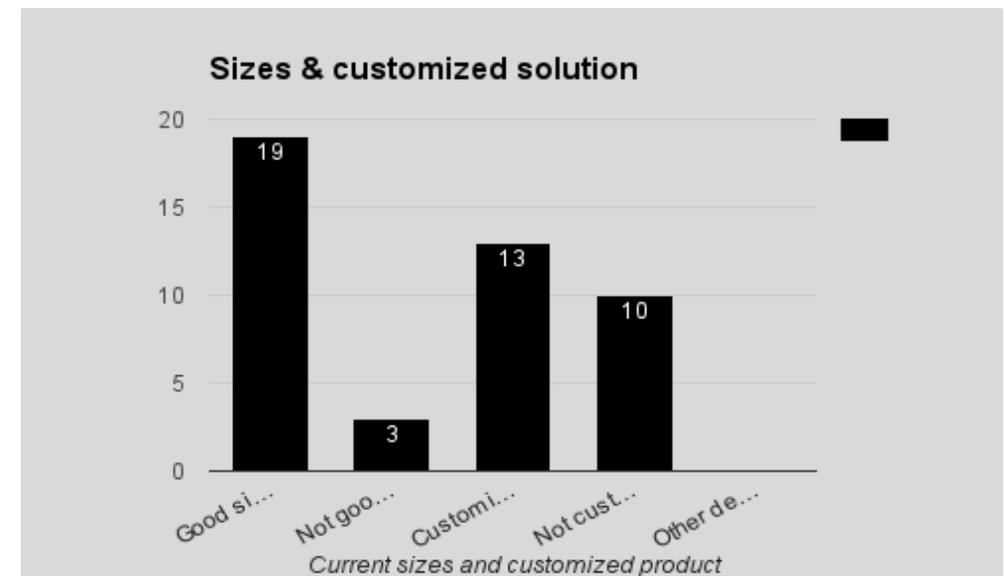


Figure 4.4.1 illustrates the data from question 18a, which also is summarized in table 3.2. As indicated above, most participants think the sizes are suitable at their workplace.

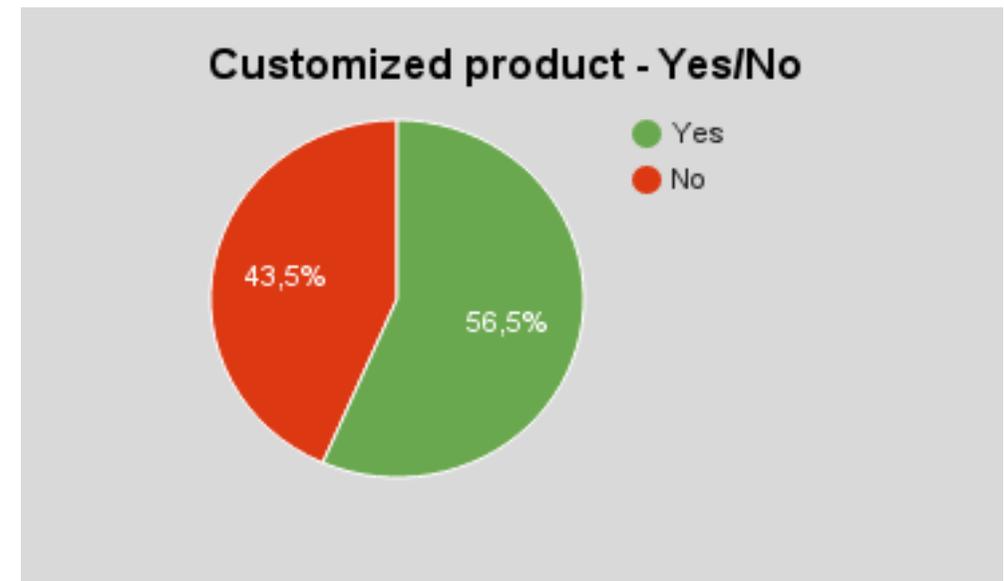


Figure 4.4.2 illustrates the data from question 19. As indicated above, 56.5percent think it would be of value to have a customized

Table 4.4.3 is data from question 18 c, which presents what the participants think about a moveable product.

Should it be moveable?	Quantity
Yes	17
No	6
Other design solutions	<ul style="list-style-type: none"> - Able to lock the wheels - Invisible wheels - Hanging solution on the wall

Table 4.4.4 shows the data from question 18 d. As indicated in the table the most requested colors for the smart plant wall are black, white and gray.

Colors	Quantity
White	16
Black	9
Gray	7

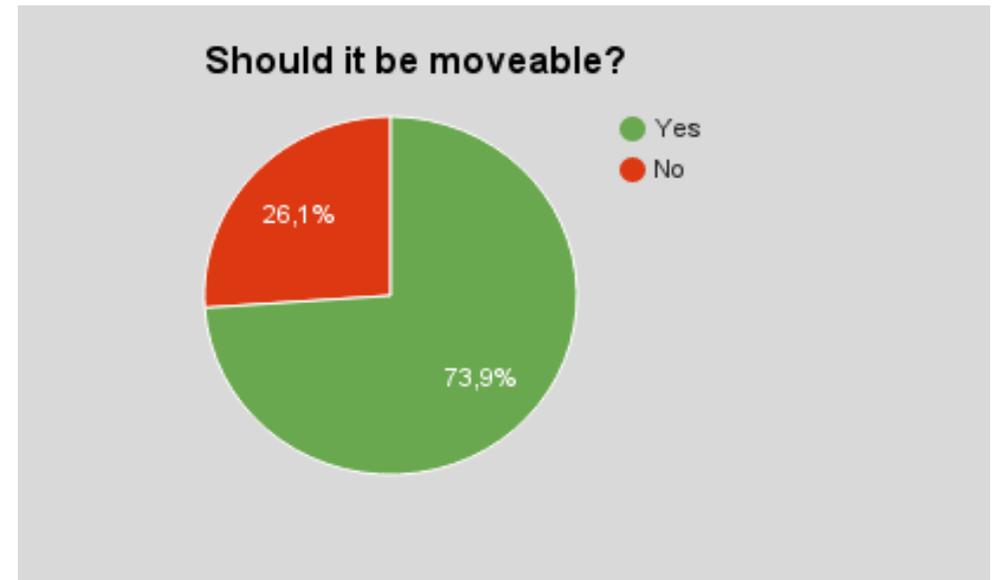


Figure 4.4.3 illustrates the data from question 18 c. As seen in the Figure, most people like the moveable function of the smart plant wall.

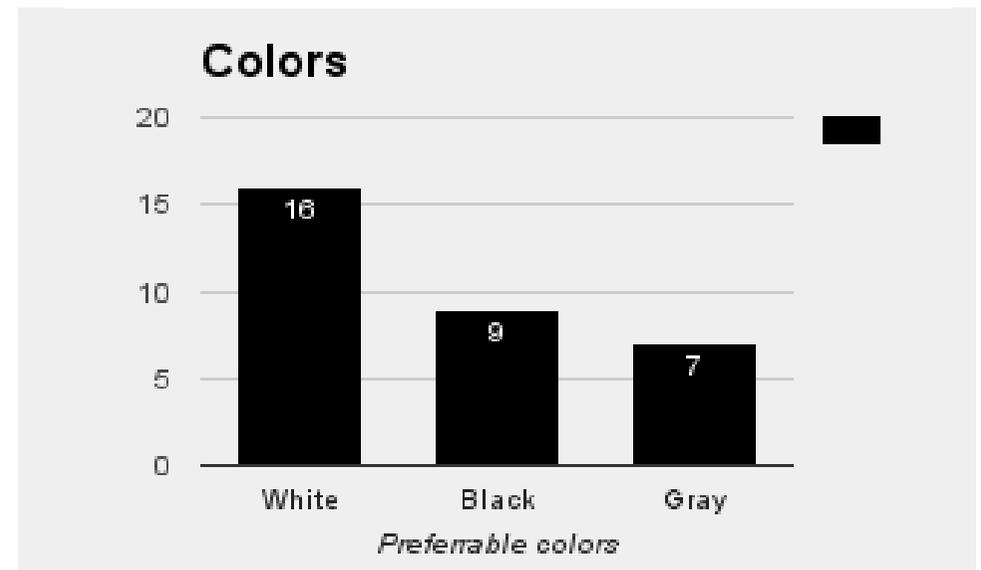


Figure 4.4.4 illustrates the data from question 18 d. As indicated above, for the smart plant wall the most suitable color is white.

Table 4.4.5 presents the summarized data from question 18 d, which highlights what kind of material the participants would prefer.

Material	Quantity
Plastic	10
Rubber	1
Tree	2
Metal	2

Table 4.4.6 present the data from question 18 b, which gives data about what the participants think about the design of the product.

Design	Quantity
Like the design	14
Don't like the design	3
Have design suggestions	9
Suggestions for the product:	<ul style="list-style-type: none"> - Ecological plastic - Plants on both sides - Too much flowers - Round model? - Eclipse model? - Possible to cultivate in it?

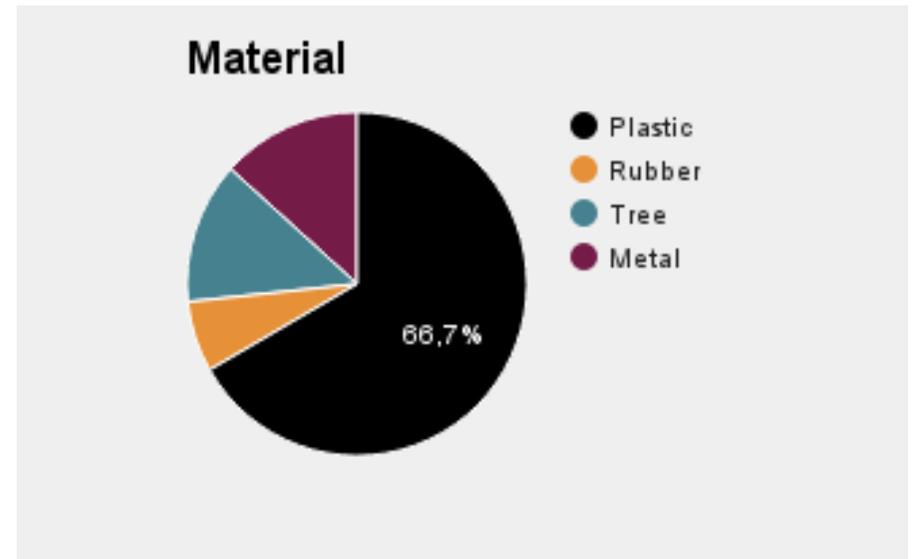


Figure 4.4.5 illustrates the data from question 18 d. As indicated above, plastic is the most preferable material.

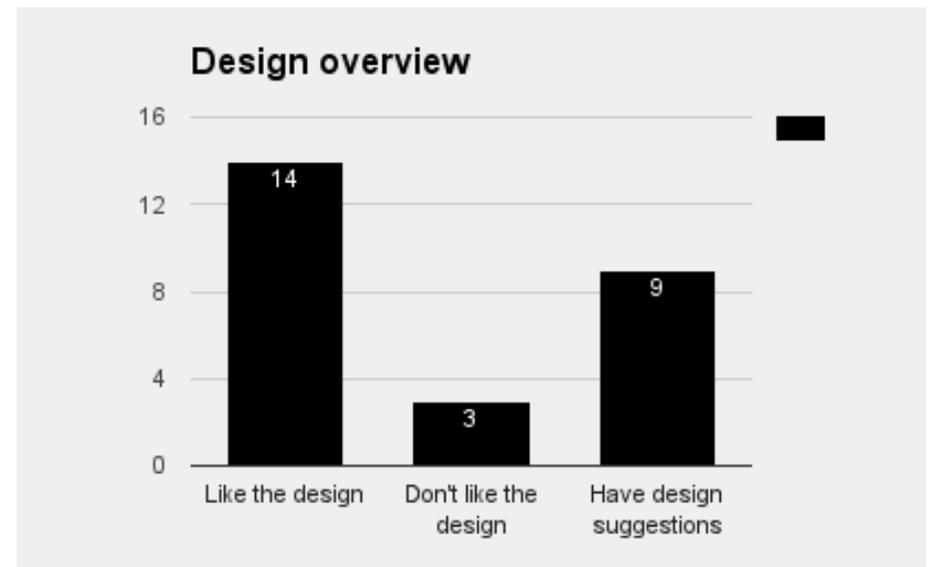


Figure 4.4.6 illustrates the data from question 18 b. As the Figure shows, most people think the design is good.

Table 4.4.7 present question 27, which indicates if the participants think the product would fit as a partition wall.

Could see this product as a partition wall	Quantity
Yes	19
No	2
Other advice	- Not higher than 1.50m due to security rules (Volvo) - It is to big

Table 4.4.8 present question 20, which gives data about the importance of light integration n the smart plant wall.

Light/lamp	Quantity
Yes	17
No	1
Optional	15
Design importance	15
Other advices	- Integrated solution - Mix with fake plants - Light installed in the ceiling - LED light - If ugly: No buy

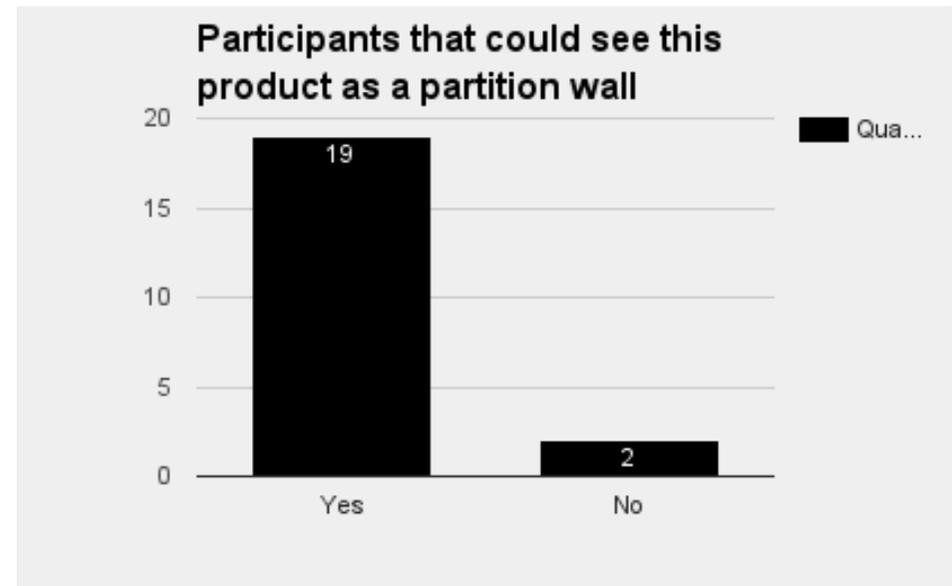


Figure 4.4.7 illustrates the data from question 27, as seen above 19 out of 21 believe the smart plant wall would fit as a partition wall.

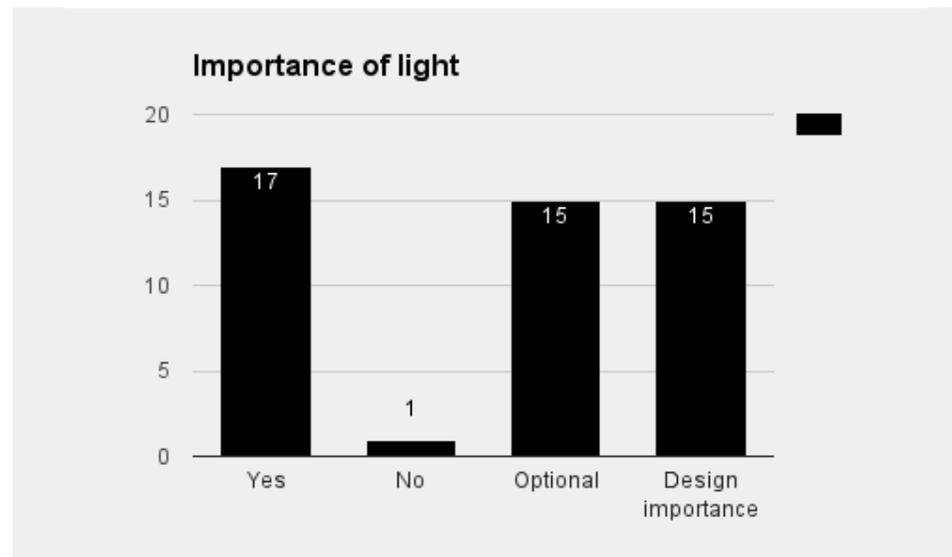


Figure 4.4.8 illustrates the data from question 20, which shows that the light is important and that the light should be an optional part that easily can be integrated to the smart plant wall.

4. 4. 1 Linking Design Challenges - Thoughts from Oboya

When we presented the data 4.1 – 4.8 to Oboya, they mentioned that they are going to sell the same smart plant wall in Sweden, which they already sell in China. For instance Oboya said, “We seeks to implement the existing strategy that we have in the Chinese market into the Swedish market. Our strategy is to diffuse the smart plant wall by volume, and thus build a large customer base. Later the customer base can result in synergy effects by selling other products, and thus gain profits in the long term.” This implies that the strategy that Oboya has set is going to be implemented, even though the data shows that there are some minor modifications that could be made for the Swedish market, for instance the integrated light functionality. Oboya’s strategy of launching the same product with the same strategy as in the Chinese market makes the risk of failure much lower, this are due to the lower costs (costs of new tools for production). Another aspect that lowers the risks is the similar needs between the Chinese market and the Swedish market, which indicates that the existing product has a high likelihood to be sold in Sweden as well. Moreover, in a later version of the smart plant wall Oboya is going to consider the data from this study, for instance provide customers with customized solutions, such as the lamp integration systems and different material to choose between.

4. 5 Smart Functions

The smart functions play a vital role of the plant wall, since it gives the product its “smart” functions. However, in order see if they customers think the smart functions are of value we have made four questions about what the potential customers think about the smart functionalities within the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the box marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 22. How important is it that the product contains the smart features?	Question 24. How valuable do you think it is that the product contains other functions, such as speakers, alarm and recording possibilities, etc.?	Question 26. How important do you think it is that the product can emit fragrances or neutralizing fragrances?	Question 32. Would it be of value that this product would have functions for measuring the air quality?
Architect office	Liljewall	<ul style="list-style-type: none"> - The measurement is good. - Mechanical air cleaners: good especially when many people are sick. - Does it need any cord? Problem if there is no any outlet. - Air cleaning sounds good; that there is a system that takes care of it. - There is probably many that like those smart products. 	<ul style="list-style-type: none"> - If it becomes a good marketing tool for some companies, it would be good! - Speakers would be really good: Since in the offices you want to have a general audio, as a background sounds. Very good! - Need different sounds; maybe some alarm that starts different hours, for instance when to stay up and also some sound as a coffee machine would be fun. Possibilities to change sound would be of value. 	<ul style="list-style-type: none"> - Not give any fragrances. - But to neutralizing would be good. - Some clients have problem if they stay too close to a restaurant and get the air in, it would be a good thing with this function for them. 	- No data
Car mechanical store	Mekonomen	<ul style="list-style-type: none"> - It is very good with the automatic watering. It is important and good! - It is an extra value to have these smart functions. Also the air cleaner is good. 	<ul style="list-style-type: none"> - Nothing that is of need. 	<ul style="list-style-type: none"> - It would be of value if this machine would neutralize bad smell. 	It would be of value. Nice to have some more information. I would check the values in it and see whether it is ok.
Property Management specialist to school facilities	Chalmersfastigheter	<p>I can see a greater value in the plant wall itself. That it is beautiful, and that it releases some moisture, rather than there are measurement possibilities in it.</p> <p>No sound in office environments, maybe in more public environments, it may be more feasible there. It could be an option.</p>	The air cleaner not so very important. More important to be able to have different plants in it.	Not so important.	It is a competitive factor compare to others.

Property Management specialist to school facilities	Chalmersfastigheter	It is valuable. It is good. If you can minimize the service of it would be good.	Yes it would be good, only if only one person can handle it. It has to be a safe system where only few people have access to it. Measure the climate conditions. Air -quality is good to measure. But the automatic watering is more important.	To neutralizing the smell would be good. Especially close to labs where it sometimes smells bad.	It would be the an extra good thing. "We wouldn't buy this to only measure the air quality". But it is valuable that it can do it.
University	Högskolan Borås	Yes	No I don't think so.	Yes it would be of value in the "Student dining room" to neutralize the smell form the food.	Yes it would be very good, especially for the places where there might be some problems.
Municipalities	Härryda kommun	It is good with measurement of the air, the temperature. Also good the get alarm if there is bad conditions. I think the smart functions are the reason why we would put it there. Otherwise we would just buy a plant. But if you bought many of them, then maybe not everyone need to have these smart functions.	The lightning system of it would be a good thing to have. Also if there were a music function it would be good. Also in the dining room it would be of value to have speakers.	No smell.	It is the most important with this machine. It is good to save this data.
Municipalities	Stenungsunds kommun	No. It is enough if they are green and looking nice.	Maybe the air cleaning system would be good.	No smell	
Offices and manufacturing	SKF	Automatic watering would be really good. But the connection to internet might not be as important.	No.	No smells. But good if it neutralizes the bad smell. For instance, in the factory where it is oil fog, it has been a problem for our employees.	I don't see it as an important reason. But it is positive.
Offices and manufacturing	Volvo cars	The best thing is that it takes care of itself.	For me it is a nice plant, but I don't see the smart functions so necessary here, besides that it takes care of itself. But then I don't know all the functions so good. Maybe that I change my mind when I have tried them.	No.	Not for us, since we already do that. But it is good there is an option for that, if I need it in the future.

Logistics office and storages	DB Schenker	It is good that it can be automatic, that it takes care of itself.	No, I don't think so, for our office. Perhaps in another offices.	No.	Very important.
Logistics office and storages	TNT	I think the air cleaner is really good to have integrated in this product. Also to measure it.	Music and speakers would be interesting and nice to have today. They use it in a grocery store nearby my home; they play for instance chicken sound close to the eggs, etc. I would use the speaker to make the employees more motivated and integrated, perhaps to put in a background sound.	Not interesting.	Yes
Sheet metal workshop	Godhems plåt	The air cleaning system is very good application in this product. Also that you can see it on your app. The automatic watering system is also good.	But not the other things, maybe it is because of my age. Good if it is possible to upgrade the software if it is needed. Similar as the Tesla cars, which can easily be upgraded, which is good! The more technology, the more things that can struggle. But the main thing is to have the green plants, and if we don't need to watering them it is even better. Also a very positive to measure the air quality.	Maybe if it neutralize bad air in toilets etc.	Yes it would be that. Since we don't have any data whether our air cleaner we have today is good or not. I can see a big value of measuring the data, since we will then know if we need to be better or not.
Small offices	GU Ventures AB	It is quite important that it waters itself but the other things that it can do through the internet connection is seen more like a fun feature that perhaps is used the first week (for instance that you can order a taxi by the internet connection if it were possible). I think the early adopters would choose this product because of all the features compared to anything else. It is good for the marketing but it is not necessary to have extra technology features in the product.	No it does not work at all in the West. I do not believe that sound of chirping birds, etc. would be beneficial. It is better that the product focuses on its core value and not on other areas like for example audio playback.	No artificial fragrances, but the flowers and plants, which are integrated in the product, are welcome to smell in a natural way. It should not be too fragrant in public places. No neutralization of scents but if you walk past the plant wall it would be nice if we get the feeling that we passed a rainforest like the scent the and humidity.	Not very important.
Spa/wellness	Hagabadet	I think it is very cool. We think it would be good if it intake CO2. It would be of value if it gives out cold air.	It would be cool. If it could make sound zones trough speakers.	Yes, It would be good if it could give out fragrances. Neutralize smells - No.	No.

Spa/wellness	Stenungsbaden Yacht Club	No, I can't see it. Since it would probably be more expensive. I would go to the root problem, for instance the ventilation problem. (Nothing said about the automatic watering)	It would be good to measure the air quality and the noise. But it wouldn't be only for that. But it is extra good functions when it comes to this kind of products.	Good if it neutralize smells.	I am afraid we wouldn't use it in our business.
Large office	Cowi	The automatic irrigation system should be of importance if we would irrigate our own plants. But if there were some one that came and took care of them the automatic irrigation system would be less important for us	It would disturb us in our organization if it had some form of audio function. I believe that this function could be more beneficial in the public area but not here in our environment.	No emit of fragrance but neutralization of cooking odors that is spreading from our canteen would be beneficial.	It would be interesting to have the function and work with it.
Large office	Sweco	That is the whole thing with it. Otherwise, there are similar at the market already.	Maybe not, we don't know	It would be good if it neutralize the smell.	I don't trust the data. It has to be calibrated, and then make some comparison against other professional tools.
Tech company	Got Design	Good with automatic watering system. Also the air cleaning. But not interesting with the measurement and that it is connected to the internet, since I would never do that. But there are probably people that like it.	Not really. "A plant is a plant"	Good if it neutralizes smells. Fragrant naturally by plants is good.	- No data
Tech company/programmer	Hive and five	Not only to see how the plant is doing, but also measure the air quality, temperature, so it could be a hub where to have all the data.	I would like to have the possibilities to grow on stuff in it. And the smart function would be to see how much nutrition and water the plants need, if I have to fill some extra of something.	Good if it could neutralize the bad smells. It might be good in entrances to have good smell. But not in offices.	- No data
Care facility/hospital	Västra Götalandsregionen, public environment	The automatic watering is good, and i think it is the most important. Internet makes it more exclusive.	No, the air cleaner seems good.	Not so good for the hospitals, but neutralize the bad smell would be good.	Pretty important.
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	If the price would be lower, than it would be better.	No.	No	Hard to say, it is a question for the landlord.
Care facility/hospital	Västra Götalandsregionen, Närhälsan	The purification function is absolutely of value.	The alarm function is good. But if you include too much features into the product it could result in something bad. I would not prefer to have music features in this product. I would rather invest in it separately.	Not emit scents that can create allergies. Remove existing scents, such as smell from wounds would be beneficial.	Some would appreciate it while others would not do it.

Retailers	Bellis	<p>Afraid if something brakes, and then it might not signal if it need water and it will die. Therefore it has to be reliable.</p> <p>I like the air cleaner function - We believe that many customers would like this function.</p> <p>Nice to measure the air in a room, like in an office with a lot of computer.</p> <p>Good to say, "there is an integrated air cleaner" which will gather dust. (There are a lot of particles from the paper.)</p>	<p>Warning lamp that signals when to watering it.</p> <p>We like the air cleaning.</p> <p>We like the automatic watering, also to see the data of how much water, etc. it need.</p>	<p>No smell.</p> <p>Air cleaning function is good here as well.</p>	Yes
Retailers	Luwasa	<p>Also good if it takes away pollen.</p> <p>Person 1: "I don't think it is good in my world" - Because there have to be a person that fills water in it, but I don't know that much of new innovation.</p> <p>Person 2: I think it is good to have these smart functions.</p>	<p>We are too old for this technology.</p> <p>It seems really good with all of this technology.</p>	<p>Neutralizing fragrances is good. Then it is better that the plants smell.</p>	Yes it would be of value.
Veterinary clinic	Råda bot	<p>It is good that it have the automatic watering system, since it will have higher likelihood to survive.</p> <p>I think also the smart functions such as the air measurement is good, and also that you can see on our phone how it is doing.</p>	<p>Not so necessary, beside the measurement.</p>	<p>To decrease the smells would be of value.</p>	I think it is good. Since if it was good air then the employees would be calm.

Table 5.1 presents question 22, which illustrates the importance of smart functions of the plant wall among 25 companies.

Importance of smart features	Quantity
Important	19
Not important	1
No data	2

Table 5.2 presents the question 24, which highlights what smart functions that are of most valuable among the 25 companies.

Important smart functions	Quantity
Air quality	6
Measurement of air	6
Watering system	5
Speakers	5
Not important	6
No data	2

Importance of smart functions

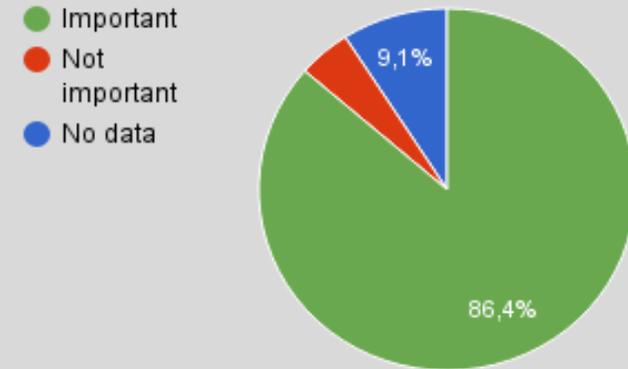


Figure 5.1 illustrates the data from question 2. As indicated above 86.4 percent think the smart functions are of importance in the smart plant wall.

Importance of other smart functions

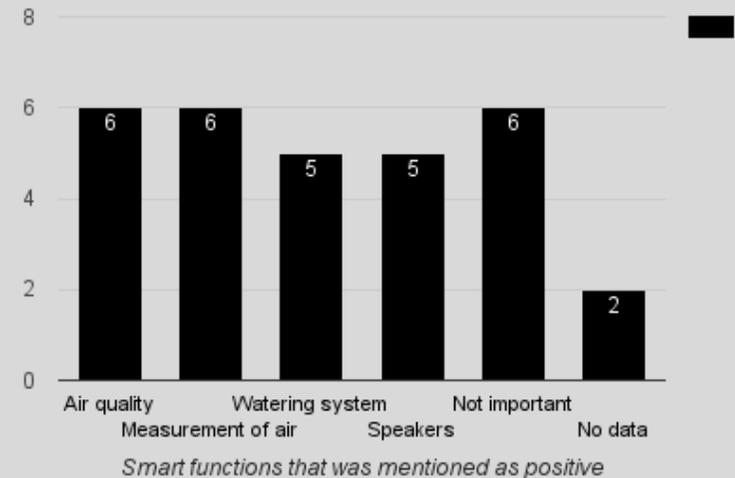


Figure 5.2 illustrates the data from question 24. As indicated above, all the smart functions are of importance.

Table 5.3 presents the data from question 22, which is another question where data was received about what functions the participants themselves brought up as the most important function of the smart plant wall.

Positive to functions	Quantity
Air cleaner	8
Automatic watering system	6
Measurement of air	3

Table 5.4 present the question 32, which is highlights the importance of the measurements functions of air quality.

Measuring air quality	Quantity
Good function	17
Not good function	5

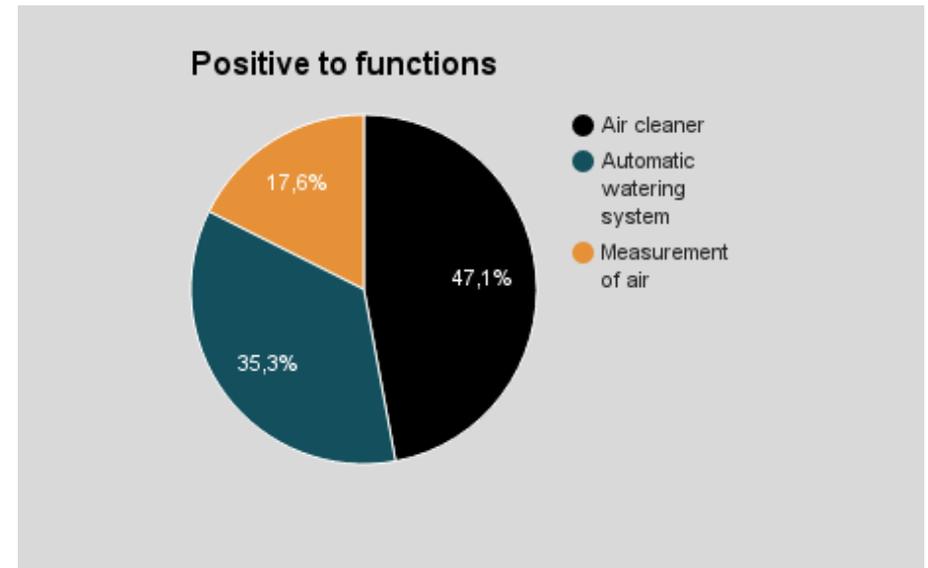


Figure 5.3 illustrates the data from question 16. As indicated above the air cleaner, automatic watering system and the measurement air function are positive features in the smart plant wall.

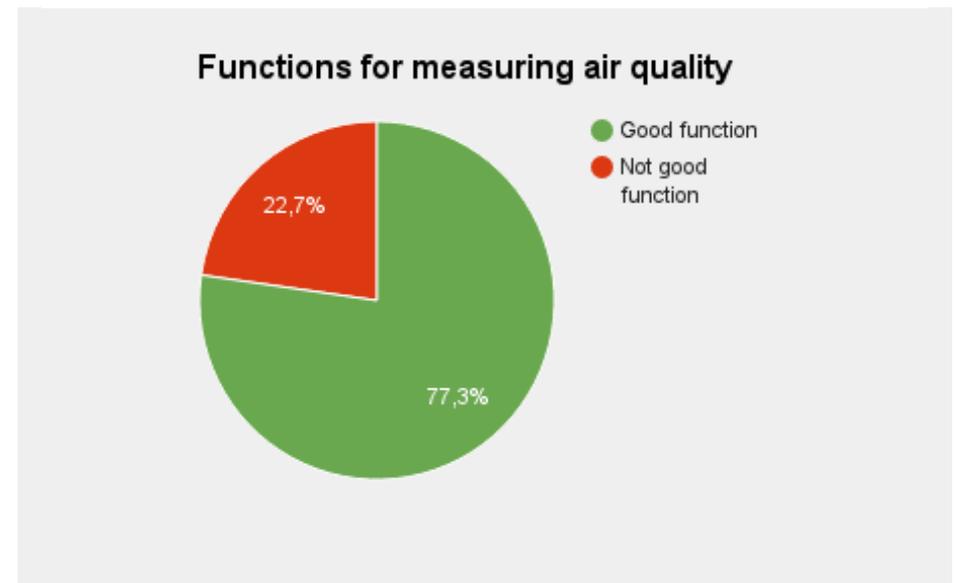


Figure 5.4 illustrates the data from question 16. As indicated above, 77.3 percent thinks the measurement of the air quality is a good function.

4. 5. 1 Linking Smart Functions to Challenges - Thoughts from Oboya

When we presented the data of the smart functions to Oboya, we found out that Oboya's thoughts was similar as the answers that we had collected in our research. For example, Oboya believe there is a market opportunity in the Swedish market since they said "The results of the smart functions are positive, since it points out that Swedish companies have a need of the integrated smart functions, which actually makes the smart plant wall to a product with three products in one, because of to the smart functionalities such as the automatic watering and the air cleaner system." Another interesting function that Oboya highlighted were the speakers, which were mentioned as a function that the customers appreciated. Hence, Oboya believe that speakers could be integrated in a later version of the smart plant wall.

4. 6 Price Class

A challenge for Oboya is to decide what price class the smart plant walls should have. Thus, questions about what the potential customers are willing to pay for the smart plant wall is asked. As follows from the table shown below there are four questions about price class of the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the box marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 30. How big impact do you think the economic benefits are when choosing a smart plant wall?	Question 31. How big do you believe the practical benefits are when choosing this product?	Question 33. What would motivate you to pay more for this smart plant wall in compare to your current plant service?	Question 42. What would you pay for this product today?
Architect office	Liljewall	- It is good that it will water itself. Good that no one needs to be there and watering it.	- No data	- No data	- The 1.60m would be 8000 - 12.000 SEK - Hard to compare to other products.
Car mechanical store	Mekonomen	To decrease the cost would be of value. Very good for us to cut the cost.	- No data	- No data	With many functions it will probably cost more. Not easy to say a price. 10.000 - 15.000 SEK for the biggest one.
Property Management specialist to school facilities	Chalmersfastigheter	It is important.	- No data	- No data	I don't know. It has to be compared to screens and other plant walls.
Property Management specialist to school facilities	Chalmersfastigheter	It is important if it can be cheaper. If the price is lower it is easy to decide if to buy it. But of course there could be some technical aspects.	If it practical easy to take care of it would be good.		Can't say. Call Bellies and ask them what their counterparts would cost. (20.000 – 25.000 SEK) - Some thousands maybe, but don't know.
University	Högskolan Borås	If it becomes cheaper it would be positive.	- No data	- No data	Hard do to say. But for a very big plant a need to pay around 5000 SEK. Around 10.000 SEK.
Municipalities	Härreda kommun	Hard to say.	- No data	- No data	10.000 - 15.000 SEK
Municipalities	Stenungsunds kommun	Yes	Good if it increases the air humidity.	Depends on the costs	No data

Offices and manufacturing	SKF	Yes, it is very important.	They are important. But it depends on if the decision makers want them.	- No data	I don't know anything about the prices.
Offices and manufacturing	Volvo cars	The price is the most important. But is it cheaper in long term it would be of value. It have to be a business case for us, and what kind of effect will it have on us.	- No data	- No data	I have no idea! 10.000 - 15.000 perhaps. (But first he said 2000 SEK) We would never pay 40.000 SEK for a product like this. It would never get into the companies.
Logistic offices and storages	DB Schenker	- No data	Hard to say.	The measurements and a higher air quality.	300 - 800 SEK / month when leasing.
Logistic offices and storages	TNT	It depends on; if it becomes cheaper it would be good. But I need people with knowledge that can cut the plants and keep them fresh.	- No data	- No data	Maybe the 1.20m for 4000 SEK (But it have to go through other process)
Sheet metal workshop	Godhems plåt	No, actually nothing.	- No data	I would rather have a one cost, and not a subscription.	1.60m for 10.000 - 12.000 SEK
Small offices	GU Ventures AB	Not so big.	Huge. There are companies that sell green plants as a service and I could really see this product in their product range. People want to buy the service where they pick leaves and water the plants etc.	- No data	It is hard to say but one-time payment approximately 5000 - 6000 SEK for one product, including the plants. If you choose to rent the service I would guess 500 SEK a month and that includes that someone take care of it once a month.
Spa/wellness	Hagabadet	No, nothing at all.	Yes, if it takes care of itself.	If there are these smart functions as we already talked about. And also if it cleans the air.	I have no idea. Perhaps through a leasing agreement. We would rent it, since it also is a safe thing for us. Because if it not works we would give it back.
Spa/wellness	Stenungsbaden Yacht Club	Yes it would be good.	It is good that is moveable and that it is watering itself.	I would pay if they have the right design for our place. Also that there is a service contract. Also if we could see that it would make it better for our customers.	4000 SEK If it was customized: 12.000 SEK (Looks like a palm tree)
Large office	Cowi	It is a great value. The total cost must be seen in relation to how long the product is working.	Not if we lease the service. Then it would be the same for us as we have it today.	If it really cleanses and is good for the indoor climate and the humidity it is a value.	- No data
Large office	Sweco	It depends on the costs. But it has to be compared to other things.	It is good with the practical benefits if it could make it cheaper when leasing.	That it looks nice, and that it is connected to our environment values.	In leasing: 100 SEK/month. In leasing: 300 SEK/month.
Tech company	Got Design	Don't know.	- No data	- No data	8000 - 10.000 SEK for the 1.60m maybe a little bit more for the 1.90m

Tech company/programmer	Hive and five	- No data	- No data	- No data	Person 1: 10.000 - 15.000 SEK Person 2: 3000 – 4000 SEK
Care facility/hospital	Västra Götalandsregionen, public environment	If it save money for us it would be good.	Pretty big.	If it can show us on that the air quality becomes better.	- No data
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	It is good if we can save money.	It is relevant if the service price can be lower.	If the service price becomes cheaper, since I compare it against a normal plant wall.	- No data
Care facility/hospital	Västra Götalandsregionen, Närhälsan	It is relevant.	It is relevant.	That it takes care of itself so you do not have the monthly cost. The survey preferences would be of value. I think that some customers would just want the plants/plant wall and not technical features.	It would certainly be valuable if it would cost 25.000 SEK. But the product must be related to something. If the customer only wants to buy a plant, then the price is not justifiable.
Retailers	Bellis	We believe the plants need to be taking care of, but the time to take care of it would be lower.	- No data	- No data	Around: 15.000 SEK
Retailers	Luwasa	No, since I have hard to see how this product would work for us. Someone have to go to the plant and cut the leafs anyway.	- No data	- No data	Maybe 15.000 SEK.
Veterinary clinic	Råda bot	It depends on what the price of it is.	I think is good, since we don't have time to put time to take care of it. That's why I believe it is good and save time.	If you could make sure that they will survive. Kind of a guaranty that they will survive if you do this and that. Also if they die that there should be option to buy a new plant.	Hard to say, but between 5000 - 10.000 SEK

Table 6.1 presents the summarized data from question 42, which highlights what price class the smart plant wall could have in the Swedish market.

Cost	Quantity
1000 – 4000 SEK	3
5000 – 9000 SEK	3
10.000 - 16.000 SEK	9
17.000 SEK +	1



Figure 6.1 presents data from table 6.1. As the figure indicates the price class suitable for the Swedish market starts at 10.000 SEK.

4. 6. 2 Linking Price Class to Challenges - Thoughts from Oboya

When we presented the data of the price class to Oboya they became positively surprised that the participants have a willingness to pay 10.000 SEK for the smart plant wall. The underlying reason behind Oboya's surprisingly reaction is that they thought the potential customers would more likely pay 6000 SEK. However, Oboya has chosen to implement a strategy that is based on selling as much volume of the smart plant wall as possible. For instance, Oboya said, "The volume strategy means that the price tag of the smart plant wall will be approximately 4000 SEK". This means that Oboya is lowering the price up to 60 percent off from the price (10.000 SEK) that the potential customers were willing to pay, according to our research. Oboya believes the 60 percent reduction of the price of the smart plant will result in a faster and bigger customer base.

4. 7 The Need

The final questions we asked in the interview session were based on the critical question - if the smart plant meets the need of the participants. As follows from the table shown below there are two questions about the smart functions that are integrated in the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the boxes marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 38. Do you have a need of a smart plant wall in your current situation?	Question 39. Would you consider to have this product in your home?
Architect office	Liljewall	- I have a project where this product would fit very well!	Yes.
Car mechanical store	Mekonomen	Yes, maybe depending on the price.	Yes the small one maybe. But i think it is more for companies.
Property Management specialist to school facilities	Chalmersfastigheter	Yes, I would see this product in many places.	- No data
Property Management specialist to school facilities	Chalmersfastigheter	Yes, I can see several places where I can imagine to have it right now. But it hasn't been anything that I have been missing. Would like to have message when it is on the market. It has a good competitive factor compared to normal plant walls.	- No data
University	Högskolan Borås	Yes, I can see this product in some different places here.	Probably not. Especially not in my home. Maybe in homes with very dry air.
Municipalities	Härreda kommun	Yes, I think it is good at the classrooms in the schools. Also in the elderly houses, fantastic for them. Especially in the entrance. Perhaps not for a landlord. But for the clients that rent our buildings.	No/Yes. Maybe in the entrance.
Municipalities	Stenungsunds kommun	No, but in some places it would be of value, like in our conference rooms, etc.	No

Offices and manufacturing	SKF	We could maybe have it in the factory, especially in the old buildings. I can see some need, but it could also be fixed by another solution as well.	No, maybe the functions. But not the design in my home.
Offices and manufacturing	Volvo cars	To be honest, we don't have too big need of this today.	- No data
Logistic offices and storages	DB Schenker	No, but maybe for the measurements, but we have a very modern and new buildings so we don't have any big issues with the air today. And if it was only for the visual effect then it come to a price questions where it will be compared to another plant wall.	Depends on what kind of home you have. But it could be good if there was a problem in the house.
Logistic offices and storages	TNT	Nice to have. I would really like to have it. It would be easier for me to sell in it to the "leaders", compared to only a normal air cleaner. It is the combination that makes it interesting.	Maybe for a big house, but not for my home.
Sheet metal workshop	Godhems plåt	This product would be really good for our stuff room; It would give life and a better indoor environment. I think they are nice.	Yes I would.
Small offices	GU Ventures AB	If it is possible to decrease the noise a lot, it would definitely be a buy product. No, I think that we would have been interested if it would have been better looking.	Yes, but not as it looks today. I want a model that shows less of the pot and more of the green plants and that it can be put up on a wall. I would love to have it on my wall at home, which would be really cool!
Spa/wellness	Hagabadet	Yes and No. I miss to make different sound zones and to have different smell - zones. For this purpose I would find this product as a need.	No. Maybe in another design. Maybe my wife would like it.
Spa/wellness	Stenungsbaden Yacht Club	No. Maybe if it was good design, and if we could test the product and if it have the right price class.	No
Large office	Cowi	No, I do not see the need. I see this product more as a plant and that someone else should take care of it. I would rather buy the service than to take care of the whole product.	Yes absolutely. A small good-looking variant.

Large office	Sweco	No.	Not at home.
Tech company	Got Design	Not here, but maybe in bigger spaces. But they have to do something with it since it looks terrible. "Looks like it is really cheap, typical Chinese" (Looking at the flowers)	Yes, why not. Especially with the air cleaning system. I believe the small one if the air cleaner works good. The bigger ones for companies.
Tech company/programmer	Hive and five	Not in our little room. But there is a "want to have" factor. A number 7 of 10 of a scale.	If you can grow your stuff in it.
Care facility/hospital	Västra Götalandsregionen, public environment	Not in this building, but in many other places. If it is allowed.	Yes. Beautiful to look at, just as a aquarium.
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	No	No
Care facility/hospital	Västra Götalandsregionen, Närhälsan	The product satisfies a need that is not stated at the moment. We follow specifications of quantified needs and at present we do not see the need of the product. Our regulations have not got so far yet.	No, I got to much public environment feeling of it.
Retailers	Bellis	Sounds interesting, this is what we would like to have. Yes, if the price is reasonable. There is some competition in Holland, but they are very expensive. Around 60k.	It would be nice to have it home as well. Guess it depends on the price. I guess young males would think this is interesting.
Retailers	Luwasa	Yes. Send mail, absolutely.	Yes, I think we would be better in selling these products to "homes" than to companies. Because, it should be easy to take care of, and also as a nice design product. I think it is easier to sell to "homes", but we are not doing it.
Veterinary clinic	Råda bot	Not today, maybe in the future.	Yes if there is space for it.

Table 7.1 presents the summarized data from question 39, which shows what the participants think about to have a smart plant wall in their home.

Home-product	Quantity
Yes	13
No	7
No data	5

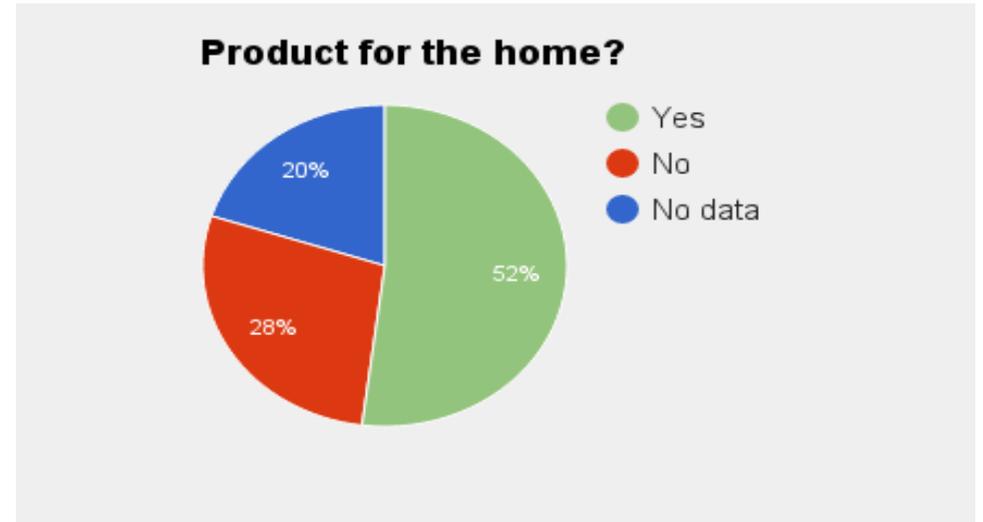


Figure 7.1 presents data from table 7.1. As the Figure indicates above, 52 percent of the participants would think the smart plant wall is a product for the home.

Table 7.2 presents the summarized data from question 38, which shows that 16 participants would like to buy a smart plant wall.

Category	Companies	Willing to buy	Not willing to buy
Architect office	Liljewall	X	
Car mechanical store	Mekonomen	X	
Property Management specialist to school facilities	Chalmersfastigheter	X	
Property Management specialist to school facilities	Chalmersfastigheter	X	
University	Högskolan Borås	X	
Municipalities	Härryda kommun	X	
Municipalities	Stenungsunds kommun		X
Offices and manufacturing	SKF	X	
Offices and manufacturing	Volvo cars		X
Logistics office and storages	DB Schenker		X
Logistics office and storages	TNT	X	
Sheet metal workshop	Godhems plåt	X	
Small offices	GU Ventures AB		X
Spa/wellness	Hagabadet	X	
Spa/wellness	Stenungsbaden Yacht Club		X
Large office	Cowi	X	
Large office	Sweco		X
Tech company	Got Design		X
Tech company/programmer	Hive and five	X	
Care facility/hospital	Västra Götalandsregionen, public environment	X	
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	X	
Care facility/hospital	Västra Götalandsregionen, Närhälsan		X
Retailers	Bellis	X	
Retailers	Luwasa	X	
Veterinary clinic	Råda bot		X
	TOTAL:	16	9

4. 7. 1 Linking the Need to Challenges - Thoughts from Oboya

When Oboya took part of the summarized data from the questions highlighting the need of the smart plant wall, they become surprised that the product had such a need in private homes. For instance, Oboya said following, “We are surprised to see that people would consider to have a smart plant wall in their homes, since we believe the product is too large and that it would take up too much space in a normal house.” However, Oboya opposite the fact of selling to private homes due to consumers purchasing law and other rights that make it a little more difficult to sell to private costumers. When table 7.2 was showed for Oboya they find it strange that the car mechanical store/garage does not see any need of the smart plant wall, they said, “We thought that mechanical car shops have a big need of the smart plant wall, because of all the air pollution that arises with all the cars”. In conclusion, Oboya was positive to see that there was a need of the smart plant wall in the Swedish market, and thus the data from table 7.2 supports Oboya’s decision to launch the product in the Swedish market, without changing the original product from China.

4. 8 Synthesis - The findings from our research

The current data collected from the interviews with Oboya regarding the smart plant wall seems to validate the view that the challenges of revers innovation is not found in the case study of Oboya. The challenges of frugal innovation and revers innovation are presented in the table 8.1. However, with conclusive evidence, our study show reasons why the challenges in the literature are not found in the case of Oboya and their smart plant wall. Our identified reasons “Business Model Strategy” and “Similarities in Customer Needs” will next be presented.

The findings (the identified reason why the challenges in the literature is not found in our case) are generated from the empirical data and summarized under the bold sub-headings.

4. 8. 1 Business Model Strategy

1. Fast diffusion: Oboya seeks to implement their existing strategy that they have in the Chinese market into the Swedish market, and thus sell as much volume of the smart plant wall as possible. The under lying reason behind this strategy is to build a large customer base. Later the customer base can result in synergy effects by selling their other products, and thus gain profits in the long term.

2. Pricing of product: The volume strategy means that the price tag of the smart plant wall will be approximately 4000 SEK, which compared to 10.000 SEK, is a 60 percent off from the price that the customers were willing to pay according to our research. Oboya believe the 60 percent reduction of the price of the smart plant will results in bigger customer base.

3. Partner up: In order to diffuse out the smart plant wall in the market Oboya seeks to partner up with a plant service firm that can supply the product to existing customers. The partner up - strategy is used in China, which means that they implement the same strategy used in the Chinese market.

4. Focus on companies: Oboya prefer to sell their smart plant wall to companies, even though our study show that the participants could imagine to buy the product for the home. The reason behind this statement is the consumers purchasing law and other rights that make it more difficult to sell to private customers compared to companies.

4. 8. 2 Similarities in Customer Needs

1. Need of purification system: Oboya found it interesting to see that "bad air" at workplaces seems to be a problem here in Sweden as it does in China. Oboya thought the result was positive, since it supports their thoughts of bad air of the indoor environment in Sweden, and thus they argue the air purification technology will be customer value in the smart plant wall in Sweden, as it is in China.

2. Need of smart functions: There is conclusive evidence from our study showing that the need of the smart functions in the smart plant wall is similar in Sweden as in China. Due to these similarities there are less incentives to customize the smart technologies for a specific market. Rather instead increase the smart technologies such as speakers since there are data showing a demand of it.

3. Positive result of the need: Oboya was positive for the need of the smart plant wall in the Swedish market, and thus the data from table 7.2 supports Oboya's decision to launch the product without changing the original smart plant wall for the Swedish market.

4. Service level: Customers value good service as an important reason when choosing a plant service company, which means that the smart plant wall would fit into the need of the customers. This because the smart plant wall increases the service through its smart functions. For instance, the automatic water system will decrease the need of watering the plants, and the air purification system will clean the air. This is a win-win situation since it increases the level of service and decreases the price of the service for the plant service provider.

Table of challenges in frugal and revers innovation literature and our findings of reasons why these challenges are not found in the study with Oboya and their innovation (smart plant wall) that was developed in an emerging country (China).

Challenges of Frugal innovation	Challenges of Revers Innovation	Our Research findings
Product poorly design for emerging economies.	Cannibalization within the company's product range.	Business Model Strategy - Fast diffusion, big customer base and no product range.
Offering does not fulfill target customers needs.		Similarities in Customer Needs - Minimize the gap of user needs between emerging and developed countries.

Table 8.3 highlights challenges in frugal innovation, revers innovation and the way Oboya overcame them.

Next we discuss these findings in more depth in the discussion chapter.

5. Discussion

In this study we set out to investigate the challenges related to transferring innovation from emerging countries to developed countries, which is related to the concept of reverse innovation. Contrary to literature of frugal innovation and reverse innovation, we found two main reasons why a company do not face challenges when taking innovations from emerging countries to developed countries. These findings are 1) Business Model Strategy and 2) Similarities in Customer Needs. Below we will discuss our findings in more detail.

The first finding in our research is named “Business model strategy” and refers to the strategy that the company will implement to the developed country, which also is the same strategy that the company uses in the emerging market. However, the strategy consists of four different approaches that together can result in synergy effects, and thus with a higher likelihood reach Oboya’s final mission to build a large customer base. The business model strategy that the company has implemented can help us to understand how the challenge of “cannibalization” highlighted in the previous literature by Corsi et al. (2014) can be overcome. The company does not have any specific technology within the existing product range, and therefore the company will likely not face any cannibalization when transferring the new product to the developed market. However, other competitors in the developed countries will likely face high competitiveness (external cannibalization). Due to the underlying reason of fast diffusion and low pricing of the product, which can enable the company from the emerging market to cannibalize the external market of competitors in the developed countries.

The second finding “Similarities in Customer Needs” shows one of the central questions of the study, which has been to explore and understand the need of an innovation developed in an emerging country and transferred to a developed country. The overall impression from looking at the results from the interviews and the outcome from the analysis is that although there are many challenges between emerging countries and developed countries, our study shows that the user needs are similar between these two countries (Sweden and China). In our case we interpret that the user needs are moving towards each other, which is shown in table 5.1. This would arguably imply that the challenges highlighted in the frugal innovation literature and the case of Foldscope, cannot be validated in the opposite direction of transferring products from emerging to developed countries (reverse innovation). Hence, this means that our study shows that challenges found in the frugal innovation are not found in the reverse innovation.

While the previous literature focus on the challenges of different user needs between emerging and developed countries, our findings suggest that it is not the difference that is of importance, but rather how fast these differences are closing in on each other, or not. For instance, Corsi et al. (2014) highlights the user need as a static view of difference, therefore our recommendation is that the view of static difference will remain. Conversely, our findings show that user needs are dynamic. The previous literature does not sufficiently capture the movement of user needs, which our study has shown to be an important element to consider. Especially when the user needs are changing and there is a large gap between the user needs in a geographical perspective, which also make it to a difficult challenge. For this reason, we recommend managers who work with strategy to consider the dynamics behind the movements of user needs.

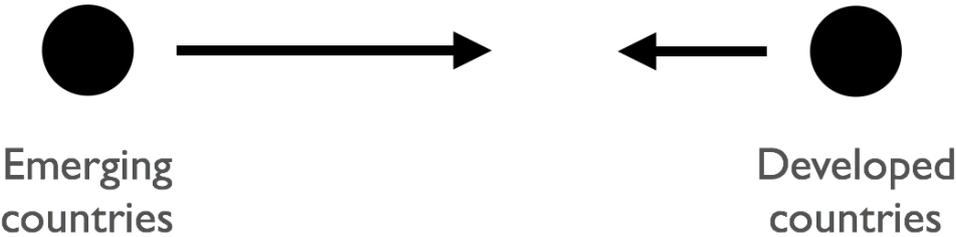


Figure 5.1 illustrates an example of movements within user needs between emerging countries and developed countries.

Finally, this open up the question of what is the determinants of how user needs changes and what makes the user needs to move in the same direction? In addition, in what conditions will the user needs convert and in what conditions will it diverge? Further research in this area may therefore look into the directory of user needs of emerging countries in relation to the user needs of developed countries.

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Appendix

This chapter contains data that complements the findings in the report. It consists of empirical data that highlights the status and suggestions about the smart plant wall.

Status

One question about status was used in order to see if the participants thought the product level of innovativeness are high, and thus become a “status” product. Viewed from the table shown below there is one question about the status of the smart plant wall. In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the box marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 29. Do you believe the smart plant wall would increase your status as a company/organization?
Architect office	Liljewall	Depends on. But generally Yes. But for us the most important thing would be the aesthetic appearance.
Car mechanical store	Mekonomen	Yes, maybe in the beginning. Like all the "new products".
Property Management specialist to school facilities	Chalmersfastigheter	Yes.
Property Management specialist to school facilities	Chalmersfastigheter	Yes it would be that. For a while I think.
University	Högskolan Borås	Yes it would be that.
Municipalities	Härryda kommun	Yes.
Municipalities	Stenungsunds kommun	No data
Offices and manufacturing	SKF	Yes, absolutely.

Offices and manufacturing	Volvo cars	Yes it could be that, for some employees. It could be nice if it give information what it does for the environment.
Logistic offices and storages	DB Schenker	Yes.
Logistic offices and storages	TNT	Yes I can see it. I think the employees will be happy to know how the air quality is.
Sheet metal workshop	Godhems plåt	Maybe not. Perhaps to make the employees feel better. We want to make the employees feel so good as possible, since they work in though conditions, especially in the winter.
Small offices	GU Ventures AB	No I don't think so at the moment. With the shape that it has today it feels a little bit boring (the white pot and the construction). But if the pot was taken away and that there was a possibility to hanging it on the wall with a combination of some innovative material when it would absolutely be status raisers!
Spa/wellness	Hagabadet	Yes if it would have these functions we talked about earlier. That it give fragrances and give cleaner air.
Spa/wellness	Stenungsbaden Yacht Club	No, but maybe for the customized product.
Large office	Cowi	Yes, it would be seen as a status increaser but then I would like to know more about it than I do today. I definitely think there should be some information tag that highlights what it does, especially if it is located near a reception where people are waiting
Large office	Sweco	No, I don't think that in our world.
Tech company	Got Design	No.
Tech company/programmer	Hive and five	Absolutely.
Care facility/hospital	Västra Götalandsregionen, public environment	Yes, it can.
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	Yes, if it looks good. But not regarding the smart function. Since the patients would not recognize it.

Care facility/hospital	Västra Götalandsregionen, Närhälsan	Yes absolutely.
Retailers	Bellis	It is probably good, especially for our younger customers. The air cleaner is really good.
Retailers	Luwasa	Maybe the smart functions, but not at our customers place. I think it would be a status for the homes, "they would be really proud to have one"
Veterinary clinic	Råda bot	Yes, and then it looks nice as well.

Table 10 present question 29, which show data about what the participants thinks about the smart plant wall as a status increaser.

Status increaser	Quantity
Yes	19
No	6

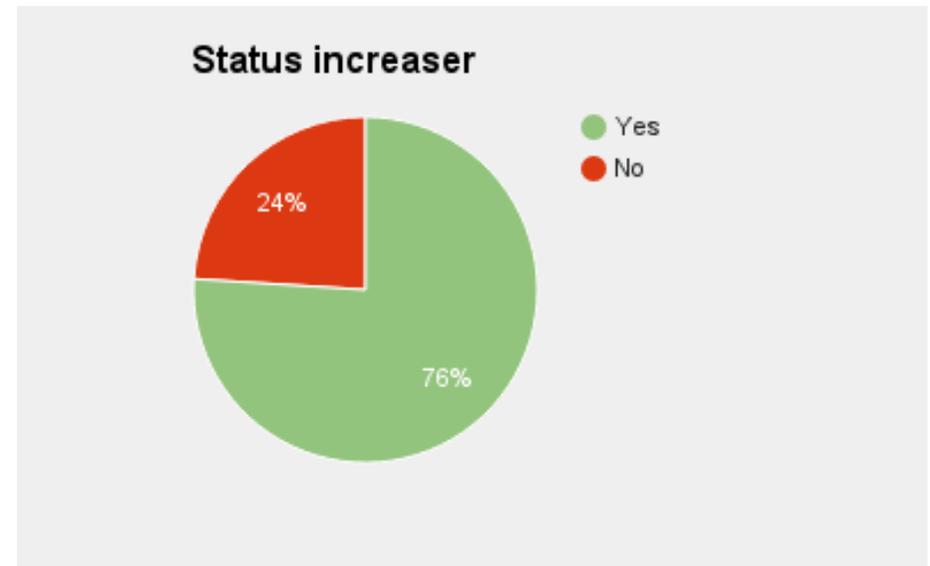


Figure 2.3 represents data from table 2.3. As the Figure indicates, 76 percent believe the smart plant wall is a status increaser.

Suggestions

In the table below are suggestions presented about the smart plant wall. These suggestions were received from participant's own thoughts and ideas about the smart plant wall during the interviews. . In the left of the table are the interviewed companies. On the top of the table are the questions used to interview the participants. The data within the box marked as bold are in the end of the table summarized and illustrated in different graphs.

Category	Companies	Question 40. What particles would you like this product to purified?	Other suggestions
Architect office	Liljewall	- No data	- Good product since in some places there is not allowed to have "soil", which this one doesn't have.
Car mechanical store	Mekonomen	- No data	What about the need of light/sun? Does it deliver as a product with plants? It would be of value!
Property Management specialist to school facilities	Chalmersfastigheter	CO2	More important to be able to have different plants in it, and to get information and recommendation about what these plants can do for your indoor environment. What do you think are worth contacting? - Interior Architects Worth to find out also: how much sound it can absorb? - This can be useful to know and market to those who work with sound. Humid factor of the plants is important and it is good to present it for the potential buyers.
Property Management specialist to school facilities	Chalmersfastigheter	- No data	How much electricity does it require? Is it battery, what kind of? Need a lot of data if I will buy it. How stable is it? Things have to be safe. Especially in school. Look for Bellis, they might want to sell this. Also, look for architectures.
University	Högskolan Borås	- No data	Customers might be: Dining rooms, to reduce smells. Also in schools and hospitals.
Municipalities	Härryda kommun	- No data	Is it possible to measure ozone? I see it as a bandage/plaster product.
Municipalities	Stenungsunds kommun	- No data	- No data

Offices and manufacturing	SKF	- No data	Maybe hang on the wall, but not necessary.
Offices and manufacturing	Volvo cars	- No data	At information places, and public places at Volvo. For us it is only a plant. We think the tables and chairs are more important, the plants are the last thing in a inventory for us. You can test the product here at Volvo if you want.
Offices and manufacturing	Volvo Group Real Estate	- No data	- No data
Logistics office and storage	DB Schenker	Dust. But generally things. We just want better air quality. Maybe CO2, since we can't open the windows.	Show data of how much better air cleaner it would be. It would be nice to have screen where you could see the data. It would be nice to have it on the wall. But I don't like if it would give noise or if it would smell bad.
Logistics office and storage	TNT	- No data	Some problem with the fuel from the airplanes, particles that are a little bit everywhere. But we have installed filter system for that, it is named Air Cleaner, it works ok. Does this product need to have all this features, for instance, if I bough several maybe I don't need all of them measure air, etc. I think it is a good product for young people. I think the industry is changing now. The cleaners start to do this business with plants, etc. since the already are in the houses. So perhaps the cleaners might be interesting in those products as well. Contact Bohus - the might get into the business.
Sheet metal workshop	Godhems plåt	- No data	If it were possible to put on the wall, it would be of value. It could decrease the noise as well. Good if they communicate all the benefits of the product, but also for the buyer.
Small offices	GU Ventures AB	Increase in humidity, pollen, dust and airborne viruses.	Perhaps this could be something for those companies, which already have some form of service contract of other products at customers. For example coffee machine companies, carpet companies. This could be a product to include in their range. With the shape that it has today it feels a little bit boring (the white pot and the construction). It needs to look more innovative both regarding the choice of the products material and the construction. Use some form of innovative material and have options how to place it. A hanging design would increase the innovative impression. I could see this product in a lobby where there is a receptionist. For example in a vehicle inspection, banks etc.

Spa/wellness	Hagabadet	Carbon dioxide Carbon monoxide Sweat particles Mold and fungus particles	Positive to put it up on the wall.
Spa/wellness	Stenungsbaden Yacht Club	- No data	I think it is a product for the public sector.
Large office	Cowi	I have no idea what particle that flies around here in the air. But if there were some that are harmful to us there should be of importance to eliminate it. It would be beneficial to know how well it could purify other particles.	One thing is the pots. In our present situation we have the pots that we bought when we invested in the plants. It would be desirable if it was possible to switch the pots in order to get modern as an included service in the contract.
Large office	Sweco	I don't know the particles around. But pollen could be good to remove.	We don't think the product have the right measurements, and would therefore don't take its data seriously. "It have to be quality" It should not be too much function inside; I believe it should be one functions in it. Decrease the pot as much as possible; I want to see more plants.
Tech company	Got Design	The particles that is not to take in. Dust etc. Dangerous particles. Pollen perhaps.	I can see this product in big spaces. Both homes (small) and companies (bigger one)
Tech company/programmer	Hive and five	- No data	Is it possible to grow things in it? (Cultivating) Optional to choose what plants you want to have in it.
Care facility/hospital	Västra Götalandsregionen, public environment	- No data	- No data
Care facility/hospital	Västra Götalandsregionen, engineering indoor environment	- I don't know what particles are in the air.	We are trying to decrease the amount of agreements. I think this product fits the hotels, lobbies and entrances.
Care facility/hospital	Västra Götalandsregionen, Närhälsan	- No data	- No data

Retailers	Bellis	- No data	<p>A plant needs someone that takes care of it, at least once in a month.</p> <p>They are good since they take little place and give a lot of green in a space.</p> <p>It is modern, and cool to have.</p> <p>Contact Klarius, which sells pots. They might be interested in this product.</p>
Retailers	Luwasa	- No data	<p>Some clients have studied and want specific plants that clean the environment. Some plants clean different things that are indoor. Usually they don't know what kind of problems they have, so they can't connect their problem with what sort of a plant they need. Therefore we always say that all plants are doing the air clean.</p> <p>In Gothenburg the plants shouldn't cost anything they think, it is a better business climate in Stockholm where they invest more in plants. "Everything has to be very cheap in Gothenburg, but in Stockholm and Malmö it can cost a bit more"</p> <p>Also, much more plants in their countries, such as Germany.</p> <p>The most important is that this needs to get a lot of light, "you just have to understand it" Because it will die, especially this one.</p>
Veterinary clinic	Råda bot	- No data	<p>The plants have to be so cheap as possible today. This market has a big price pressure.</p> <p>Good in entrances, but also for architectures.</p> <p>Want to see what kind of value it gives for us, like if the customers perceive it as a good thing, etc.</p>

